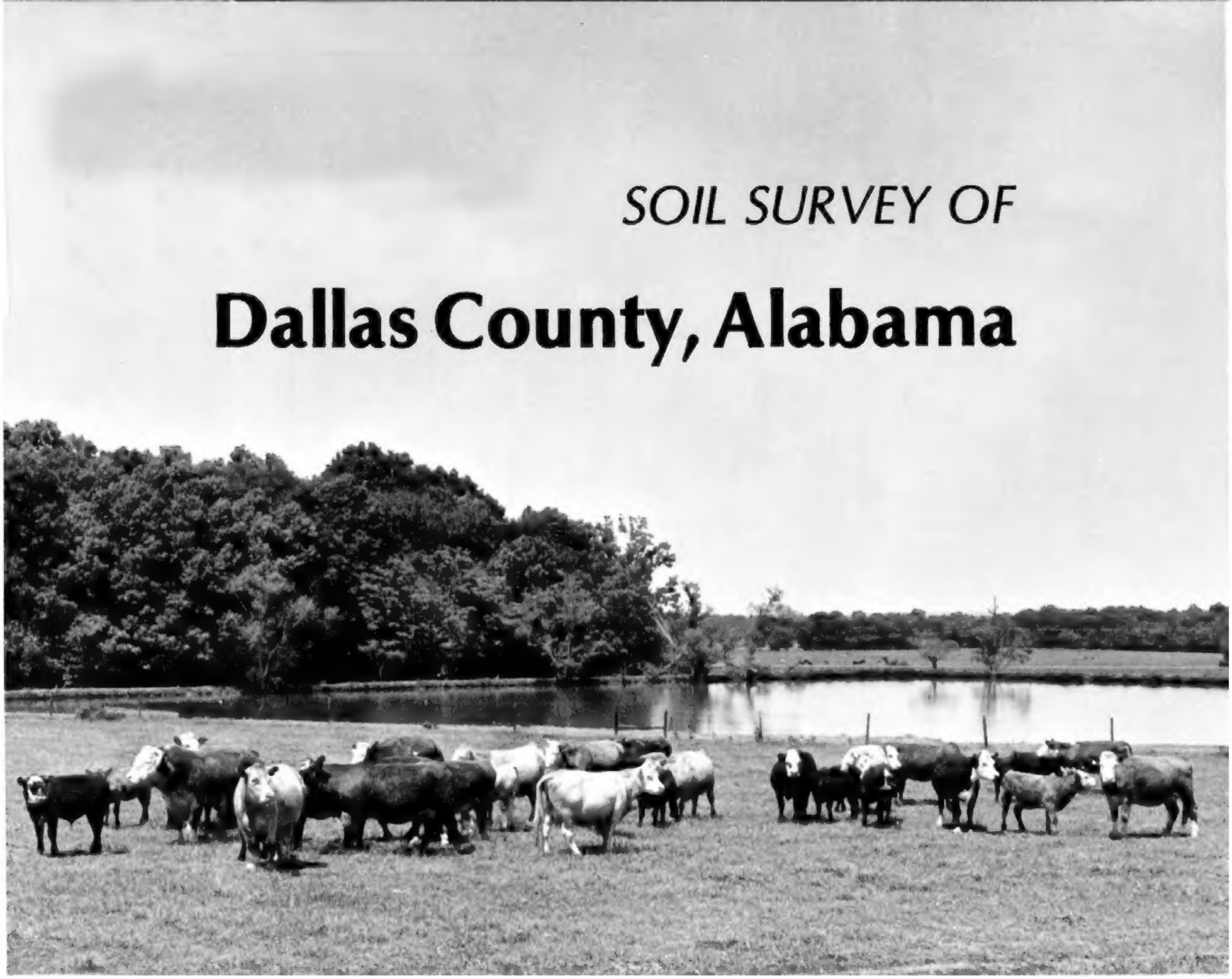
SOIL SURVEY OF

Dallas County, Alabama



United States Department of Agriculture

Soil Conservation Service and Forest Service

in cooperation with

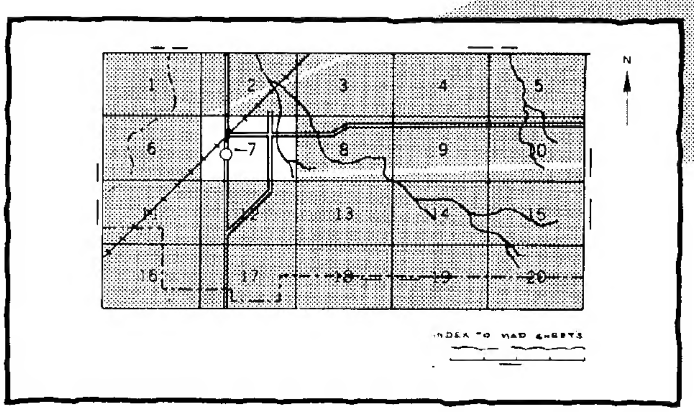
Alabama Agricultural Experiment Station

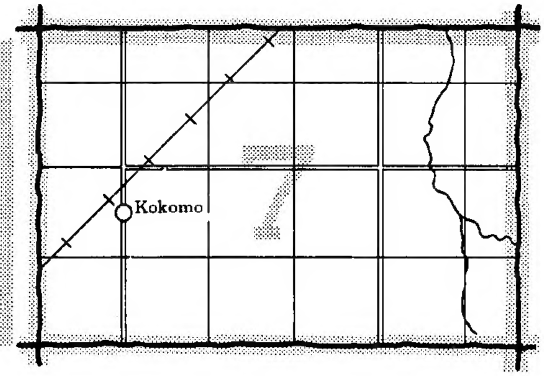
and

Alabama Department of Agriculture and Industries

HOW TO USE

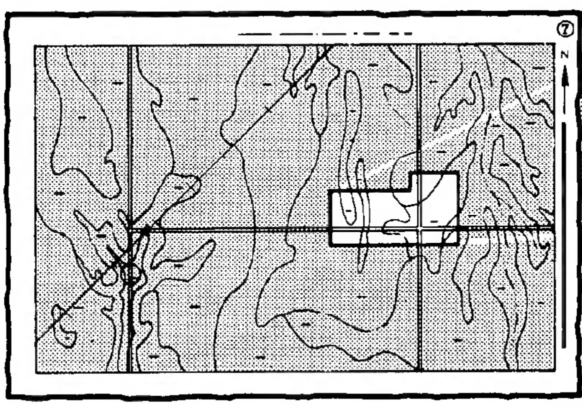
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

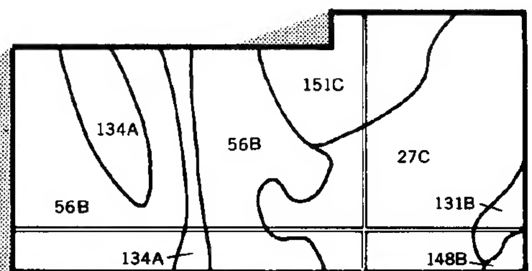




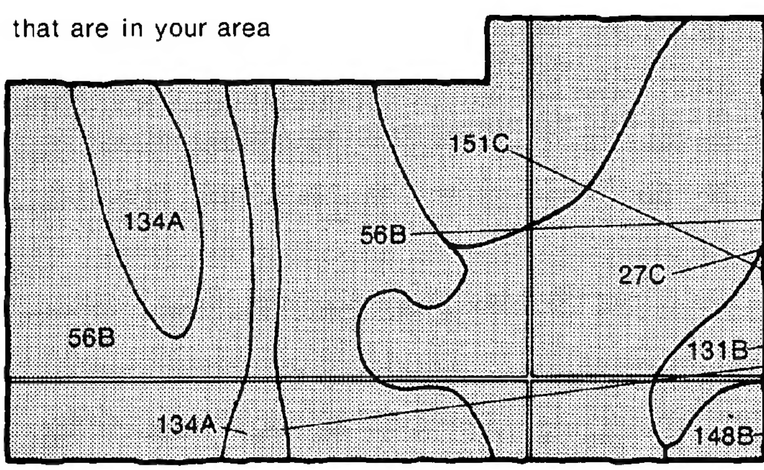
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.





4. List the map unit symbols that are in your area

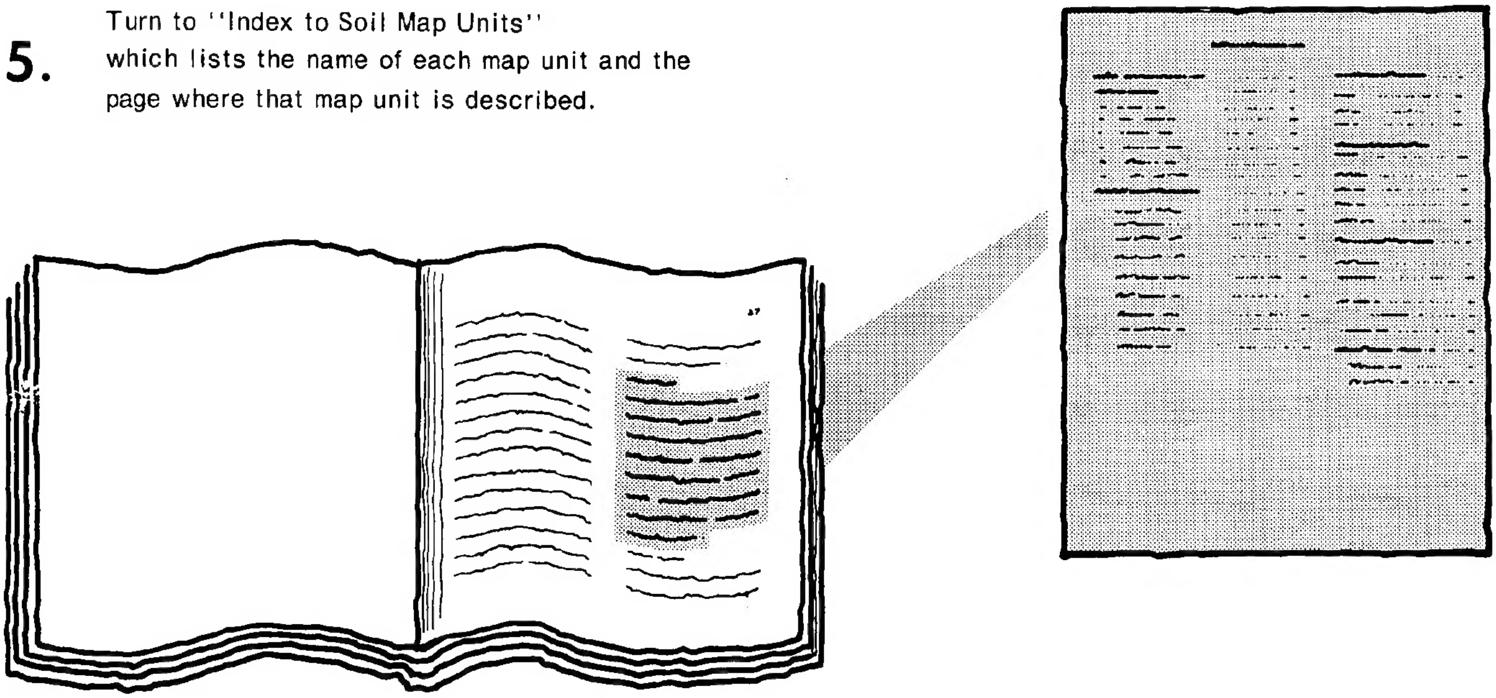


Symbols

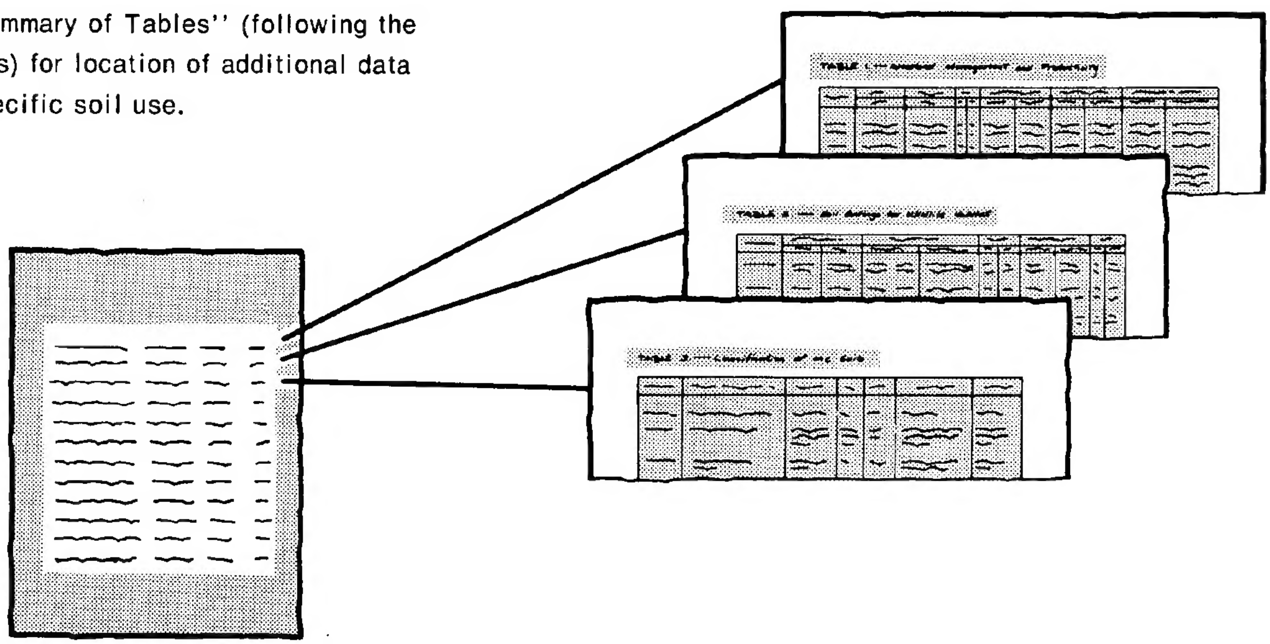
27C
56B
131B
134A
148B
151C

THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; for specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1969-77. Soil names and descriptions were approved in 1977. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1977. This survey was made cooperatively by the Soil Conservation Service, the Forest Service, the Alabama Agricultural Experiment Station, and the Alabama Department of Agriculture and Industries. It is part of the technical assistance furnished to the Dallas County Soil and Water Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps can cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

Cover: Pond and pasture in an area of Sumter silty clay, 1 to 5 percent slopes.

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Issued July 1979

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Summary of Tables

Foreword

The Soil Survey of Dallas County, Alabama, contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

This soil survey has been prepared for many different users. Farmers, ranchers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

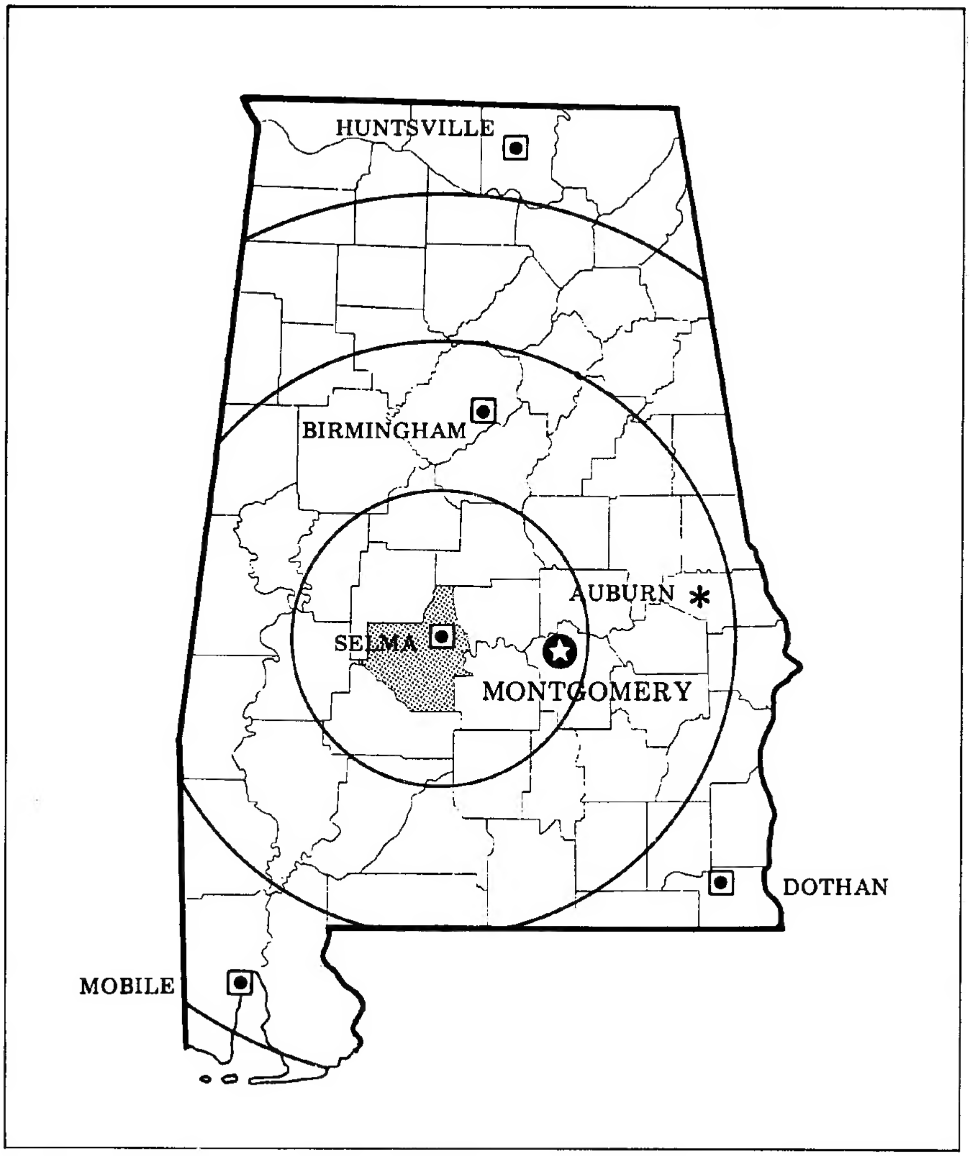
Great differences in soil properties can occur even within short distances. Soils may be seasonally wet or subject to flooding. They may be shallow to bedrock. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map; the location of each kind of soil is shown on detailed soil maps. Each kind of soil in the survey area is described, and much information is given about each soil for specific uses. Additional information or assistance in using this publication can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

This soil survey can be useful in the conservation, development, and productive use of soil, water, and other resources.

W B Lingle

W.B. Lingle
State Conservationist
Soil Conservation Service



Location of Dallas County in Alabama. The concentric circles on the map represent distance increments of 50 miles. The Alabama Agricultural Experiment Station is at Auburn.

SOIL SURVEY OF DALLAS COUNTY, ALABAMA

By Willard J. Reeves, Soil Conservation Service

Fieldwork by Willard J. Reeves, William V. Anderson, Lewis A. Dungan, Johnny C. Trayvick, and Milton Tuck, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service and Forest Service, in cooperation with the Alabama Agricultural Experiment Station and the Alabama Department of Agriculture and Industries

DALLAS COUNTY is slightly southwest of the center of Alabama (see map on facing page). It had a population of 55,296 in 1970. Selma, the county seat, had a population of 27,379. The county has a total area of 624,320 acres, or 975.5 square miles.

The county is in two land resource areas. The southern and western parts are mainly in the Alabama-Mississippi Blackland Prairie Land Resource Area, and the northern and eastern parts are mainly in the Southern Coastal Plain Land Resource Area. In the southern part of the county, geologic erosion has stripped away large areas of Coastal Plain deposits and has exposed Blackland Prairie deposits on lower elevations and on some of the side slopes.

The Alabama and Cahaba Rivers flow southwesterly across the county. A broad, nearly level to gently sloping terrace parallels the rivers. In the Blackland Prairie, uplands are mostly nearly level to strongly sloping, and bottom lands are broad and nearly level. The Coastal Plain part of the county has two rather distinctive landscapes. The northern part has narrow, sloping ridgetops, steep side slopes, and narrow bottoms. The central and eastern parts have broad, nearly level to sloping ridgetops, steep side slopes, and narrow bottoms. Elevation ranges from about 80 feet near the Alabama River in the southern part of county to about 500 feet in the highest areas in the northern part.

Dallas County, created by an act of legislature in February 1818, was formed from Montgomery County. Many of the early immigrants to the county came from Virginia, North Carolina, South Carolina, Georgia, and Tennessee.

The county is served by three railroads; by U.S. Highway 80, a major highway crossing the county from east to west; and by numerous state and county roads.

General nature of the county

In the paragraphs that follow, the natural resources, farming, and climate of Dallas County are briefly described.

Natural resources

Soil is the most important natural resource in the county. Livestock, crops, and trees are marketable products derived directly or indirectly from the soil.

In Dallas County, wells furnish nearly all of the water used for municipal and domestic purposes. In the Blackland Prairie, water is obtained from deep wells drilled through the Selma Chalk. At lower elevations, a number of artesian wells provide water for domestic use. Two rivers and many creeks furnish water for industry, farms, and recreation. There are numerous farm ponds throughout the county.

Many large deposits of sand and gravel are along the major streams. In several places these deposits are being mined for commercial use.

Large areas of the Selma Chalk are near the surface in the western part of the county. This formation can be mined for agricultural lime and for the materials used in the manufacture of cement.

Many areas of poorly drained, clayey soils on flood-prone terraces along the Alabama River are being used for brick clay.

Farming

The first settlers in Dallas County produced mainly food crops, such as corn, oats, potatoes, wheat, vegetables, and some rice and tobacco. Cotton, however, soon became the principal cash crop. A few livestock were pastured on the open range. The early farmers used no commercial fertilizers but opened new lands when crop yields became low. With the exception of the alkaline

soils in the Blackland Prairie, most of the county was covered with woodland consisting of mixed pine and hardwood. Much of this valuable timber was destroyed as the land was cleared.

In the early 1900's, insects, soil erosion on the clayey soils, and acreage controls caused a significant decrease in the acreage of cotton being grown in the Blackland Prairie. Pasture and hayland replaced the cotton, and raising of beef cattle and dairying became the chief sources of farm income.

During the 1960's, soybeans became one of the major sources of farm income in the county. At present the main sources of farm income are beef cattle, corn, cotton, soybeans, and wood products.

Climate

Dallas County has long, hot summers because moist tropical air from the Gulf of Mexico persistently covers the area. Winters are cool and fairly short, with only a rare cold wave that moderates in 1 or 2 days. Precipitation is fairly heavy throughout the year, and it peaks slightly in winter. Prolonged droughts are rare. Summer precipitation, mainly afternoon thundershowers, is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area, as recorded at Selma for the period 1951 to 1973. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 50 degrees F, and the average daily minimum temperature is 40 degrees. The lowest temperature on record, which occurred at Selma on January 24, 1963, is 4 degrees. In summer the average temperature is 81 degrees, and the average daily maximum temperature is 92 degrees. The highest recorded temperature, which occurred on June 28, 1954, is 108 degrees.

Growing degree days, shown in table 1, are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 24 inches, or 46 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 20 inches. The heaviest 1-day rainfall during the period of record was 7.08 inches at Selma on December 10, 1961. Thunderstorms occur on about 62 days each year, and most occur in summer.

Snowfall is rare; in 91 percent of the winters, there is no measureable snowfall. In 95 percent, the snowfall, usually of short duration, is less than 3 inches. The heaviest 1-day snowfall on record was more than 3 inches.

The average relative humidity in midafternoon in spring is less than 55 percent. During the rest of the year it is about 60 percent. Humidity is higher at night, and the average at dawn is about 85 percent. The percentage of possible sunshine is 65 in summer and 50 in winter. The prevailing wind is from the southwest. Average windspeed is highest, 9 miles per hour, in March.

Severe local storms, including tornadoes, strike occasionally in or near the county. These storms are short and cause variable and spotty damage. Every few years in summer or autumn, a tropical depression or remnant of a hurricane which has moved inland causes extremely heavy rains for 1 to 3 days.

Climatic data in this section were specially prepared for the Soil Conservation Service by the National Climatic Center, Asheville, North Carolina.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; the kinds of rock; and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in counties nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures.

After a guide for classifying and naming the soils was worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, roads, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called soil map units. Some map units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Map units are discussed in the sections "General soil map for broad land use planning" and "Soil maps for detailed planning."

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it is readily available to different groups of users, among them farmers, managers of rangeland and woodland, engineers, planners, developers and builders, home-buyers, and those seeking recreation.

General soil map for broad land use planning

The general soil map at the back of this publication shows, in color, map units that have a distinct pattern of soils and of relief and drainage. Each map unit is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. Areas that are, for the most part, suited to certain kinds of farming or to other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of its small scale, the map does not show the kind of soil at a specific site. Thus, it is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The kinds of soil in any one map unit differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

The soils in the survey area vary widely in their potential for major land uses. Table 4 shows the extent of the map units shown on the general soil map and gives general ratings of the potential of each, in relation to the other map units, for major land uses. Soil properties that pose limitations to the use are indicated. The ratings of soil potential are based on the assumption that practices in common use in the survey area are being used to overcome soil limitations. These ratings reflect the ease of overcoming the soil limitations and the probability of soil problems persisting after such practices are used.

Each map unit is rated for *cultivated farm crops, woodland, urban uses,* and *recreation areas*. Cultivated farm crops are those grown extensively by farmers in the survey area. Woodland refers to land that is producing either trees native to the area or introduced species. Urban uses include residential, commercial, and industrial developments. Intensive recreation areas include campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic. Extensive recreation areas include those used for nature study and as wilderness.

Descriptions of map units

1. Luverne-Greenville

Deep, sloping to steep, well drained soils that have a clayey subsoil; formed in marine sediments of the Coastal Plain

Areas of this map unit are in the northern part of the county mostly north of Summerfield and Burnsville. The landscape is narrow, mostly sloping ridgetops and steep side slopes that are dissected by many intermittent streams and a few perennial streams.

This unit makes up about 11 percent of the county. About 39 percent of the unit is Luverne soils, 22 percent is Greenville soils, and the remaining 39 percent is soils of minor extent.

Luverne soils in most places are below Greenville soils. Luverne soils are on the lower ridgetops and steeper side slopes, whereas Greenville soils are usually on the highest ridgetops and the upper parts of side slopes. Both soils have a loamy sand surface layer and a clayey subsoil.

Minor soils in this unit include the well drained Lucedale, Lucy, and Troup soils on uplands and the somewhat poorly drained Mantachie soils on flood plains.

This unit is mainly woodland (fig. 1). A few areas on the narrow ridgetops are used for cultivated crops, hay, and pasture.

Potential for cultivated crops is poor because of the small size and irregular shape of the ridgetops, the steepness of the side slopes, and the hazard of erosion. Potential as woodland is good. The use of equipment is moderately restricted on the more steeply sloping Luverne soils. Generally, the potential for urban uses is poor; however, areas of Greenville soils on ridgetops have fair potential. Low strength, slope, and the moderate to moderately slow permeability of the soils are the main limitations. Potential for development of habitat for woodland wildlife is good.

2. Brantley-Tadlock

Deep, nearly level to moderately steep, well drained soils that have a clayey subsoil; formed in marine sediments of the Coastal Plain

Most areas of this map unit are just north of Selma. They extend eastward from near Oakmulgee Creek to near Mulberry Creek. The landscape is nearly level to sloping, narrow to broad ridgetops and strongly sloping to moderately steep side slopes. The areas are dissected by well defined drainage patterns.

This unit makes up about 5 percent of the county. About 41 percent of the unit is Brantley soils, 18 percent is Tadlock soils, and the remaining 41 percent is soils of minor extent.

Brantley soils in most places are south of Tadlock soils. Brantley soils generally have a brown subsoil, and Tadlock soils have a dark red subsoil. Both soils have a fine sandy loam surface layer and a clayey subsoil.

Minor soils in this unit include the well drained Lucy, Luverne, and Troup soils on uplands and the somewhat poorly drained Mantachie soils on flood plains.

This unit is used for cultivated crops, but many areas are used for hay and pasture. The moderately steep areas along the larger drainageways are woodland.

Potential for cultivated crops and as woodland is good. The hazard of erosion is moderate to severe in the more sloping cultivated areas. Potential is fair for most urban uses because of low strength and moderate shrink-swell potential. The slow permeability of the Brantley soils is a severe limitation for septic tank absorption fields. Potential for development of habitat for openland and woodland wildlife is good.

3. Sumter-Houston-Vaiden

Moderately deep and deep, nearly level to strongly sloping, well drained to somewhat poorly drained soils that have a clayey subsoil; formed in marine sediments of the Blackland Prairie

Most areas of this map unit are in the northwestern part of the county. The landscape is fairly wide, irregularly shaped, low ridgetops and short side slopes. The areas are dissected by many small drainageways and a few perennial streams.

This unit makes up about 7 percent of the county. About 40 percent of the unit is Sumter soils, 25 percent is Houston soils, 15 percent is Vaiden soils, and the remaining 20 percent is soils of minor extent.

Sumter soils in most places are above or are in more sloping areas than Houston and Vaiden soils. Sumter soils are well drained, Houston soils are moderately well drained, and Vaiden soils are somewhat poorly drained. All three soils have a clayey surface layer and subsoil. Vaiden soils have a seasonal water table at a depth of 1 to 2 feet.

Minor soils in this unit include the well drained Demopolis soils and the moderately well drained Oktibbeha soils on uplands; the somewhat poorly drained Leeper soils on flood plains; and the somewhat poorly drained Kipling soils on stream terraces and uplands.

This unit is used mainly for cultivated crops, hay, and pasture. Some small areas are woodland.

Potential for cultivated crops is fair, mainly because of the hazard of erosion and the poor tilth. Also, Sumter soils are limited by the shallow depth to chalk and Vaiden soils are limited by wetness. Sumter and Houston soils have fair potential for eastern redcedar, and Vaiden soils have fair potential for loblolly pine. The potential for urban uses is poor because of high shrink-swell potential, low strength, and slow to very slow permeability. Potential for development of habitat for openland wildlife is fair, and potential for development of habitat for woodland wildlife is good.

4. Savannah-Mashulaville-Quitman

Deep, nearly level to sloping, moderately well drained to poorly drained soils that have a loamy subsoil; formed in marine and old stream sediments of the Coastal Plain

Areas of this map unit are throughout the central part of the county mostly on or along old high terraces of the Alabama and Cahaba Rivers. These areas are broad uplands that are dissected by drainageways.

This unit occupies about 23 percent of the county. About 36 percent of the unit is Savannah soils, 16 percent is Mashulaville soils, 8 percent is Quitman soils, and the remaining 40 percent is soils of minor extent.

Savannah soils are generally in the highest position on the landscape, and Mashulaville soils are generally below Quitman soils. Savannah soils have a fragipan and are moderately well drained, Quitman soils are somewhat poorly drained, and Mashulaville soils have a fragipan and are poorly drained. These soils have a fine sandy loam surface layer and a seasonal water table at a depth ranging from near the surface to about 3 feet.

The minor soils in this unit are the well drained Bama, Benndale, Lucedale, Lucy, Pine Flat, and Troup soils on uplands; the somewhat poorly drained Kipling soils on stream terraces and uplands; and the somewhat poorly drained Mantachie soils on flood plains. Kipling, Lucy, and Troup soils are generally on sloping to steep side slopes.

This unit is used mainly for cultivated crops, hay, and pasture. The more poorly drained areas and the steeper side slopes are mostly woodland.

Potential is fair for cultivated crops and good for pasture, hay, and woodland. Wetness is the major limitation. The potential for most urban uses is fair to poor because of wetness, low strength, and moderately slow permeability. Potential for development of habitat for openland and woodland wildlife is good on Quitman and Savannah

soils, and potential for development of habitat for wetland wildlife is good on Mashulaville soils.

5. Minter-Canton Bend-Gaylesville

Deep, nearly level to gently sloping, well drained to poorly drained soils that have a clayey subsoil; formed in stream sediments

This map unit is on flood-prone stream terraces mainly along the Alabama and Cahaba Rivers. The landscape is narrow to fairly broad, low ridges and sloughs.

This unit occupies about 22 percent of the county. About 23 percent of the unit is Minter soils, 21 percent is Canton Bend soils, 12 percent is Gaylesville soils, and the remaining 44 percent is soils of minor extent.

Minter soils are in the lowest position in the landscape, and Canton Bend soils are above Gaylesville soils. All of these soils have a loamy surface layer. Minter soils have a seasonal water table and are poorly drained. They are in depressional areas or old sloughs, and some areas are ponded most of the time. Canton Bend soils are well drained. Gaylesville soils have a seasonal water table and are somewhat poorly drained.

Minor soils in this unit include the excessively drained Bigbee soils, the well drained Congaree and Wickham soils, the moderately well drained Bonneau soils, and Udifluvents, channeled.

Potential for cultivated crops is fair. Gaylesville and Minter soils are severely limited by wetness and flooding, but Canton Bend soils have good potential for cultivated crops. The unit has good potential as woodland, but wetness is a management concern on Minter and Gaylesville soils. Potential for residential and most other urban uses is poor because of the flood hazard and the wetness. Potential is good for development of habitat for wetland wildlife on Minter soils, good for development of habitat for openland and woodland wildlife on Canton Bend soils, and fair for development of habitat for openland, wetland, and woodland wildlife on Gaylesville soils.

6. Bama-Troup-Kipling

Deep, nearly level to steep, well drained and somewhat poorly drained soils that have a loamy and clayey subsoil; formed in stream and marine sediments of the Coastal Plain and Blackland Prairie

Areas of this map unit are in the southern part of the county. The landscape is sloping, narrow to broad ridgetops and steep side slopes. Geologic erosion has stripped away large areas of Coastal Plain deposits and exposed Blackland Prairie deposits at lower elevations (fig. 2). The areas are dissected by many intermittent streams and a few perennial streams.

This unit occupies about 11 percent of the county. About 28 percent of the unit is Bama soils, 20 percent is Troup soils, 15 percent is Kipling soils, and the remaining 37 percent is soils of minor extent.

Bama soils are on the nearly level to sloping ridgetops, Troup soils are mostly on the moderately steep and steep upper parts of side slopes, and Kipling soils are on the sloping and moderately sloping lower parts of side slopes. Bama soils are well drained and have a loamy surface layer. Troup soils are well drained and have a thick, sandy surface layer. Kipling soils are somewhat poorly drained and have a loamy surface layer.

Minor soils in this unit include the well drained Demopolis, Lucedale, Lucy, and Saffell soils; the moderately well drained Oktibbeha and Savannah soils; and the somewhat poorly drained Mantachie soils on flood plains.

This unit is used mainly as woodland and for cultivated crops. Some areas are used for hay and pasture.

This unit has fair potential for cultivated crops, good potential as woodland, and fair potential for most urban uses. Bama soils have good potential for cultivated crops and for urban uses; Troup and Kipling soils, however, have poor potential for these uses mainly because of steepness of slopes and the clayey texture of the Kipling soils. Potential for development of habitat for openland and woodland wildlife is fair to good.

7. Oktibbeha-Demopolis

Deep and shallow, gently sloping to moderately steep, moderately well drained and well drained soils that have a clayey subsoil or that are underlain by chalk; formed in marine sediments of the Blackland Prairie

Areas of this map unit are scattered over the southern part of the county. These soils formed from chalk or acid clay over chalk. The landscape is narrow, gently sloping to sloping ridges and sloping to moderately steep side slopes. The areas are dissected by many small drainageways.

This unit occupies about 8 percent of the county. About 40 percent is Oktibbeha soils, 24 percent is Demopolis soils, and the remaining 36 percent is soils of minor extent.

Oktibbeha and Demopolis soils are in about the same position on the landscape. Oktibbeha soils are deep, moderately well drained, acid soils that have a clayey surface layer. Demopolis soils are shallow, well drained, alkaline soils that have a silty clay loam surface layer.

Minor soils in this unit include the well drained Sumter soils, the moderately well drained Houston soils, the somewhat poorly drained Kipling and Vaiden soils on uplands, and the somewhat poorly drained Leeper soils on flood plains.

This unit is used mainly for pasture. Some areas are used for hay and cultivated crops or as woodland.

This unit has poor potential for cultivated crops. Its potential is limited by the slope, the shallow depth of the Demopolis soils, and the clayey texture of the Oktibbeha soils. Potential for pasture and hay and as woodland is fair to poor. Pine trees do not grow well on Demopolis

soils. Potential for most urban uses is poor because of the shallow depth to rock of Demopolis soils and because of the high shrink-swell potential, the very slow permeability, and the low strength of Oktibbeha soils. Potential is fair for development of habitat for openland wildlife and good for development of habitat for woodland wildlife on Oktibbeha soils and poor for development of habitat for openland and woodland wildlife on Demopolis soils.

8. Kipling-Vaiden-Leeper

Deep, nearly level to gently sloping, somewhat poorly drained soils that have a clayey subsoil; formed in marine and stream sediments of the Blackland Prairie

Areas of this map unit are in the western part of the county. Most of the areas are in lower positions on the landscape than the surrounding units. The landscape is nearly level to gently sloping, broad terraces and low uplands that are dissected by first bottoms along the drainageways.

This unit occupies about 13 percent of the county. About 35 percent of the unit is Kipling soils, 26 percent is Vaiden soils, 25 percent is Leeper soils, and the remaining 14 percent is soils of minor extent.

Kipling and Vaiden soils are on uplands and terraces, and Leeper soils are on flood plains of creeks. Kipling soils have a loamy surface layer, and Leeper and Vaiden soils have a clayey surface layer. These soils have a seasonal water table at a depth of 1 to 3 feet, and Leeper soils are subject to frequent flooding.

Minor soils in this unit include the moderately well drained Angie, Bonneau, Houston, and Oktibbeha soils, the well drained Sumter soils, and the somewhat poorly drained Quitman soils. Bonneau and Quitman soils are mostly along the southwest edge of the county.

This unit is used mainly for cultivated crops, pasture, and hay. Some areas are woodland.

This unit has fair potential for cultivated crops and good potential for hay and pasture. It is limited by wetness and the clayey texture of the soils. Potential as woodland is good to fair. The use of equipment is moderately restricted by, and the seedling mortality rate is moderate because of, wetness and the clayey texture of the soils. Leeper soils are not suited to pines. Potential for most urban uses is poor because of wetness, very slow permeability, high shrink-swell potential, and low strength. Also, Leeper soils are subject to flooding. Potential for development of habitat for openland and woodland wildlife is fair to good.

Broad land use considerations

Each year a considerable amount of land is developed for urban uses in Selma and other communities in the county. About 14,000 acres in the county is urban or built-up land. The general soil map is most helpful for planning the general projected growth of urban areas, but it should not be used for the selection of sites for specific urban structures. In general, the soils that have good potential for cultivated crops also have good potential for urban development. The information about specific soils in this survey can be helpful in planning future land use patterns.

Areas where the soils have unfavorable characteristics for urban development are extensive in Dallas County. Large parts of the Luverne-Greenville unit have steep slopes, which are a limitation for many urban uses. The Sumter-Houston-Vaiden unit, the Oktibbeha-Demopolis unit, and the Kipling-Vaiden-Leeper unit include soils that have high shrink-swell potential, low strength, and slow permeability. Also, Leeper soils are on flood plains and are severely limited by flooding. The Savannah-Mashulaville-Quitman unit includes large areas of soils that are limited for some urban uses by a seasonal water table. Most areas of the Minter-Canton Bend-Gaylesville unit have poor potential for urban uses because of the hazard of flooding.

Most areas of the county, with the exception of the Luverne-Greenville and Oktibbeha-Demopolis units, have fair to good potential for cultivated crops, hay, and pasture. The narrow ridgetops and steep side slopes limit the use of the Luverne-Greenville unit for these uses. Many parts of the Oktibbeha-Demopolis unit are limited by steep slopes and the shallow depth of the Demopolis soils. Also large areas of the Bama-Troup-Kipling unit are limited by steep slopes.

Most soils of the county have good potential as woodland. Notable exceptions are Demopolis, Houston, Leeper, and Sumter soils. Pine trees do not grow well on these soils because they are alkaline.

Most of the units include soils that have good potential as sites for parks and extensive recreation areas. The heavily wooded Luverne-Greenville unit is a good example. The Canton Bend soils in the Minter-Canton Bend-Gaylesville unit have fair to good potential for intensive recreational development, especially around the William "Bill" Dannelly Reservoir on the Alabama River. Also, areas of Minter soils are good nature study areas. All of the units in Dallas County provide habitat for many important species of wildlife.

Soil maps for detailed planning

The map units shown on the detailed soil maps at the back of this publication represent the kinds of soil in the survey area. They are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protecting, and preserving the environment. More information for

each map unit, or soil, is given in the section "Use and management of the soils."

Preceding the name of each map unit is the symbol that identifies the soil on the detailed soil maps. Each soil description includes general facts about the soil and a brief description of the soil profile. In each description, the principal hazards and limitations are indicated, and the management concerns and practices needed are discussed.

The map units on the detailed soil maps represent an area on the landscape made up mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map are phases of soil series.

Soils that have profiles that are almost alike make up a *soil series*. Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped. The Minter series, for example, was named for the town of Minter in Dallas County.

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristics that affect their use. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Tadlock fine sandy loam, 2 to 5 percent slopes, is one of several phases within the Tadlock series.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes and soil associations.

A *soil complex* consists of areas of two or more soils or of areas of soils and miscellaneous areas that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area includes some of each of the two or more dominant soils or miscellaneous areas, and the pattern and proportion are somewhat similar in all areas. Gaylesville-Urban land complex is an example.

A *soil association* is made up of soils that are geographically associated and are shown as one unit on the map because it is not practical to separate them. A soil association has considerable regularity in geographic pattern and in the kinds of soil that are a part of it. The extent of the soils can differ appreciably from one delineation to another; nevertheless, interpretations can be made for use and management of the soils. Brantley-Lucy association is an example.

Most map units include small, scattered areas of soils other than those that appear in the name of the map unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the map unit. These soils are described in the description of each map unit.

Most mapped areas include places that have little or no soil material and support little or no vegetation. Such places are called *miscellaneous areas*; they are delineated on the soil map and given descriptive names. Pits is an example. Some of these areas are too small to be delineated and are identified by a special symbol on the soil map.

The acreage and proportionate extent of each map unit are given in table 5, and additional information on properties, limitations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of tables.") Many of the terms used in describing soils are defined in the Glossary.

Soil descriptions and potentials

2—Angie fine sandy loam, 0 to 2 percent slopes. This deep, moderately well drained, nearly level soil is on stream and marine terraces in the Coastal Plain. Slopes are generally smooth. Individual areas are 5 to 50 acres.

Typically, the surface layer is grayish brown fine sandy loam about 7 inches thick. The upper part of the subsoil, to a depth of 24 inches, is yellowish brown clay loam that has yellowish red and pale yellow mottles. The lower part, to a depth of 72 inches or more, is yellowish brown clay that has light gray and red mottles.

Included with this soil in mapping are small areas of more sloping Angie soils and small areas of gravelly soils. Also included are small areas of Kipling, Mashulaville, and Savannah soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. The soil has good tilth and can be worked throughout a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is present most years at a depth of 3 to 3.5 feet from January through March.

This soil has fair to good potential for cultivated crops; moderately high yields can be obtained. In some years wetness delays planting and harvesting. The soil has good potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil.

Potential is good for loblolly and slash pines. The use of equipment is moderately restricted by seasonal soil wetness and by the clayey subsoil.

This soil has poor potential for most urban uses because of the slow permeability, high shrink-swell potential, and low strength of the subsoil. Wetness is a moder-

ate limitation for many uses. These limitations are difficult to overcome. Capability subclass IIw; woodland group 2w.

3—Angie fine sandy loam, 2 to 5 percent slopes. This deep, moderately well drained, gently sloping soil is on stream and marine terraces in the Coastal Plain. Slopes are smooth and convex. Individual areas are 6 to 40 acres.

Typically, the surface layer is grayish brown fine sandy loam about 5 inches thick. The upper part of the subsoil, to a depth of 24 inches, is yellowish brown clay loam that has red and yellowish brown mottles. The lower part, to a depth of 72 inches or more, is mottled yellowish brown, red, gray, and strong brown clay.

Included with this soil in mapping are small areas of more sloping Angie soils and small areas of gravelly soils. Also included are small areas of Kipling and Savannah soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. The soil has good tilth and can be worked throughout a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is present most years at a depth of 3 to 3.5 feet from January through March.

This soil has fair potential for cultivated crops. The moderate hazard of erosion and, in some years, wetness delay planting and harvesting. The soil has good potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil. Minimum tillage, terraces, cover crops, and crop rotations help reduce runoff and erosion.

Potential is good for loblolly and slash pines. The use of equipment is moderately restricted by seasonal soil wetness and by the clayey subsoil.

This soil has poor potential for most urban uses because of the slow permeability, high shrink-swell potential, and low strength of the subsoil. Wetness is a moderate limitation for many uses. These limitations are difficult to overcome. Capability subclass IIIe; woodland group 2w.

4—Angie fine sandy loam, 5 to 12 percent slopes. This deep, moderately well drained, sloping to strongly sloping soil is on side slopes of marine terraces in the Coastal Plain. Slopes are complex and convex. Individual areas are 4 to 30 acres.

Typically, the surface layer is grayish brown fine sandy loam about 5 inches thick. The upper part of the subsoil, to a depth of 22 inches, is yellowish brown clay loam that has red and gray mottles. The lower part, to a depth of 72 inches or more, is mottled gray, strong brown, and red clay.

Included with this soil in mapping are small areas of soils that have a surface layer of gravelly fine sandy loam and a gravelly subsoil. Also included are small areas of Kipling and Savannah soils. The included soils make up about 25 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. The soil has good tilth and can be worked throughout a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is present most years at a depth of 3 to 3.5 feet from January through March.

This soil has poor potential for cultivated crops. The severe hazard of erosion and, in some years, wetness delay planting and harvesting. The soil has fair potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil. Minimum tillage, terraces, cover crops, and crop rotations help reduce runoff and erosion.

Potential is good for loblolly and slash pines. The use of equipment is moderately restricted by seasonal soil wetness and by the clayey subsoil.

This soil has poor potential for most urban uses because of the slow permeability, high shrink-swell potential, and low strength of the subsoil. Slope and wetness are moderate to severe limitations for many uses. These limitations are difficult to overcome. Capability subclass VIe; woodland group 2w.

5—Bama fine sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 10 to 100 acres.

Typically, the surface layer is brown fine sandy loam about 6 inches thick. The upper part of the subsoil is yellowish red loam to a depth of 11 inches, the middle part is red clay loam to a depth of 44 inches, and the lower part is red sandy clay loam to a depth of 78 inches or more.

Included with this soil in mapping are small areas of Savannah soils and small, depressional areas of a moderately well drained soil that is similar to Savannah soils. The included soils make up about 10 percent of the map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate to high. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has good potential for cultivated crops (fig. 3), hay, and pasture. Good tilth is easily maintained by returning crop residue to the soil.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has good potential for most urban uses; there are no significant limitations. Capability class I; woodland group 2o.

6—Bama fine sandy loam, 2 to 5 percent slopes. This deep, well drained, gently sloping soil is on ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 6 to 80 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil is yellowish red and red sandy clay loam that extends to a depth of 78 inches or more.

Included with this soil in mapping are small areas of soils that are similar to Bama soils except that they have a gravelly surface layer and subsoil. Some areas are more sloping and in many places have an eroded surface layer. Also included are areas of Savannah soils and small, depressional areas of a moderately well drained soil that is similar to Savannah soils. The included soils make up about 15 to 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate to high. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has good potential for cultivated crops, hay, and pasture. Its potential for cultivated crops is somewhat limited by a moderate erosion hazard. Good tilth is easily maintained by returning crop residue to the soil. Minimum tillage, terraces, cover crops, and rotations help reduce runoff and erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has good potential for most urban uses; there are no significant limitations. Capability subclass IIe; woodland group 2o.

7—Bama fine sandy loam, 5 to 12 percent slopes. This deep, well drained, sloping soil is on narrow ridgetops of Coastal Plain uplands. Slopes are complex and convex. Individual areas are 10 to 50 acres.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsoil is yellowish red sandy clay loam to a depth of 72 inches or more. Light yellowish brown mottles are in the lower part of the subsoil in some areas.

Included with this soil in mapping are small areas of soils that are similar to Bama soils except that they have a gravelly surface layer and subsoil. Some small areas of soils that are severely eroded, have a thinner subsoil, or are more sloping are also included. Also included are small areas of well drained Lucy soils and moderately well drained Savannah soils. The included soils make up about 25 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate to high. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has fair potential for cultivated crops. Its potential is limited by the slope and small size and irregular shape of the areas. The erosion hazard is severe. The soil has good potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil. Minimum tillage, terraces, cover crops, and crop rotations help reduce runoff and erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has fair potential for most urban uses because of the slopes. This limitation can be overcome by proper engineering design. Capability subclass IVe; woodland group 2o.

8—Bama-Urban land complex, 0 to 8 percent slopes. This map unit consists of deep, well drained, nearly level to sloping Bama soils and areas of Urban land. Individual areas of this unit range from 10 to 120 acres in size; they are 50 to 70 percent Bama soils and 15 to 35 percent Urban land. Areas of Bama soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Bama soils have a surface layer of brown fine sandy loam about 6 inches thick. The upper part of the subsoil is yellowish red loam to a depth of 11 inches, the middle part is red clay loam to a depth of 44 inches, and the lower part is red sandy clay loam to a depth of 78 inches or more. Some small areas have been cut, built up, or smoothed during construction.

The Urban land part of this unit is covered by sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of well drained Benndale and Lucedale soils and areas of moderately well drained Savannah soils. These soils make up about 15 percent of the map unit.

Bama soils are low in natural fertility and organic-matter content. Reaction is strongly acid or very strongly

acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate to high. The root zone is deep and easily penetrated by plant roots.

Bama soils are used for building sites, lawns, gardens, and parks. They have good potential for most locally adapted grasses, flowers, vegetables, and shrubs. The potential for recreational development is good.

Bama soils have good potential for most urban uses. Slopes of more than 4 percent are a moderate limitation for small commercial buildings, and low strength is a moderate limitation for local roads and streets. These limitations can be overcome by proper engineering design. Not assigned to a capability subclass or a woodland group.

9—Benndale fine sandy loam, 0 to 3 percent slopes. This deep, well drained, nearly level to gently sloping soil is on Coastal Plain uplands. Slopes are smooth and convex. Individual areas are about 8 to 100 acres in size.

Typically, the surface layer is brown fine sandy loam about 6 inches thick. The upper part of the subsoil, to a depth of 37 inches, is yellowish brown fine sandy loam; the middle part, to a depth of 58 inches, is yellowish brown and light yellowish brown fine sandy loam; and the lower part, to a depth of 78 inches or more, is yellowish brown sandy clay loam that has strong brown and light gray mottles.

Included with this soil in mapping are small areas of more sloping Benndale soils and a few small areas of soils that have a surface layer of loamy fine sand. Also included are small areas of poorly drained Mashulaville soils, well drained Pine Flat soils, and moderately well drained Savannah soils. The included soils make up about 15 percent of this map unit, but individual areas are less than 3 acres.

This moderately permeable soil is low in natural fertility and organic-matter content. Reaction is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Available water capacity is moderate. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has fair to good potential for cultivated crops; moderately high yields can be obtained. Potential is somewhat limited by the moderate available water capacity. The soil has good potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help reduce runoff and erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has good potential for most urban uses; there are no significant limitations. Capability subclass IIs; woodland group 2o.

10—Benndale-Urban land complex, 0 to 3 percent slopes. This map unit consists of deep, well drained, nearly level to gently sloping Benndale soils and areas of Urban land. Individual areas of this unit range from 10 to 150 acres in size; they are 45 to 70 percent Benndale soils and 20 to 45 percent Urban land. Areas of Benndale soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Benndale soils have a surface layer of brown fine sandy loam about 6 inches thick. The upper part of the subsoil, to a depth of 37 inches, is yellowish brown fine sandy loam; the middle part, to a depth of 58 inches, is yellowish brown and light yellowish brown fine sandy loam; and the lower part, to a depth of 78 inches or more, is yellowish brown sandy clay loam that has strong brown and light gray mottles. Some small areas have been cut, built up, or smoothed during construction.

The Urban land part of this unit is covered by sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of well drained Bama and Lucedale soils and areas of moderately well drained Savannah soils. The included soils make up about 10 percent of the map unit.

Benndale soils are low in natural fertility and organic-matter content. Reaction is strongly acid or very strongly acid except for the surface layer in limed areas. Permeability and available water capacity are moderate. The root zone is deep and easily penetrated by plant roots.

Benndale soils are used for building sites, lawns, gardens, and parks. They have good potential for most locally adapted grasses, flowers, vegetables, and shrubs. The potential for recreational development is good.

Benndale soils have good potential for most urban uses. Low strength is a moderate limitation for local roads and streets, but this limitation can be overcome by proper engineering design. Not assigned to a capability subclass or a woodland group.

11—Bigbee sand, 0 to 5 percent slopes. This deep, excessively drained, nearly level to gently sloping soil is on terraces of the major rivers and creeks. It is on the highest position on the terraces. Slopes are complex and convex. Individual areas are 6 to 150 acres in size.

Typically, the surface layer is brown sand about 8 inches thick. The underlying material is strong brown sand to a depth of 52 inches and brownish yellow and very pale brown sand to a depth of 90 inches or more. Pale brown mottles are in some layers at a depth of more than 36 inches.

Included with this soil in mapping are small areas of well drained soils that have a thick, sandy surface layer and a thin, red, loamy subsoil. Also included are small areas of well drained Wickham soils and areas of soils

that are similar to Bigbee soils except that they are above the known flood level. The included soils make up about 15 to 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is subject to rare, brief flooding—mostly from January to March—during years of unusually high rainfall. For brief periods during this time the water table is within 6 feet of the surface. Reaction ranges from medium acid to very strongly acid except for the surface layer in limed areas. Natural fertility and organic-matter content are low. Permeability is rapid, and available water capacity is low. The surface layer is very friable and can be worked through a wide range in moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has poor potential for cultivated crops and fair potential for hay (fig. 4) and pasture. Its potential for most crops is limited by the low available water capacity. Good tilth is easily maintained by returning crop residue to the soil.

Potential is good for slash and loblolly pines. The use of equipment is moderately restricted and the seedling mortality rate is moderate because of the sandy texture of the soil.

This soil has poor potential for most urban uses because of seepage and the hazard of flooding. Filling with offsite soil material helps reduce the flood hazard. This soil is a good source of material for roadfill. Capability subclass IIIs; woodland group 2s.

12—Bigbee-Urban land complex, 0 to 5 percent slopes. This map unit consists of deep, excessively drained, nearly level to gently sloping Bigbee soils and areas of Urban land. Individual areas of this unit range from 10 to 200 acres in size; they are 45 to 70 percent Bigbee soils and 20 to 45 percent Urban land. Areas of Bigbee soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Bigbee soils have a surface layer of brown sand about 8 inches thick. The underlying material is strong brown sand to a depth of 52 inches and brownish yellow and very pale brown sand to a depth of 90 inches or more. Pale brown mottles are in some layers at a depth of more than 36 inches. Some small areas have been cut, built up, or smoothed during construction.

The Urban land part of the unit is covered by sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of well drained Canton Bend and Wickham soils and somewhat poorly drained Gaylesville soils. The included soils make up about 10 percent of the map unit.

This map unit is in a flood-prone area, but some areas at higher elevations are not known to be flooded. Bigbee soils are rapidly permeable and have a low available water capacity. They are low in natural fertility and organic-matter content. Reaction ranges from medium acid to very strongly acid except for the surface layer in limed areas.

Bigbee soils are used for building sites, lawns, gardens, and parks. They have poor potential for most grasses, flowers, and vegetables and for some shrubs because of their droughty nature and low fertility. Frequent applications of fertilizer and water help overcome this limitation. Potential is also poor for recreational development.

The Bigbee soils have severe limitations for building sites and most other urban uses because of the hazard of rare flooding. Filling with offsite material helps overcome this limitation. Onsite investigation is essential to properly evaluate and plan the development of specific sites. Not assigned to a capability subclass or a woodland group.

13—Bonneau loamy fine sand, 0 to 5 percent slopes. This deep, moderately well drained, nearly level to gently sloping soil is on stream terraces of rivers and creeks. Slopes are smooth and convex. Individual areas are 4 to 100 acres in size.

Typically, the surface layer is brown loamy fine sand about 6 inches thick. The subsurface layer is light yellowish brown and pale yellow loamy fine sand to a depth of about 26 inches. The upper part of the subsoil is light yellowish brown sandy clay loam to a depth of 31 inches, and the lower part is mottled yellowish brown, brown, gray, and red sandy clay loam to a depth of 75 inches or more.

Included with this soil in mapping are areas of soils that are similar to Bonneau soils except that they have a thicker surface layer, a thinner surface layer, or a more clayey subsoil. Some lower lying areas are subject to rare, brief flooding and are not so well drained as Bonneau soils. Also included are areas of well drained Wickham and Canton Bend soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. Reaction is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is moderate. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is at a depth of about 3 feet during most years from December through March.

This soil has fair potential for cultivated crops, hay, and pasture. Its potential is somewhat limited by the moderate available water capacity. During dry years, summer crops suffer from lack of moisture. Cover crops and crop rotations add organic matter to the soil and help increase yields of cultivated crops.

Potential is good for loblolly and longleaf pines. The use of equipment is moderately restricted and the seedling mortality rate is moderate because of the sandy texture of the soil.

This soil has fair to poor potential for sanitary facilities because of wetness and seepage, and fair to good potential for most other urban uses. It is moderately restricted for dwellings with basements and shallow excavations because of wetness. Capability subclass IIw; woodland group 2s.

14—Bonneau-Urban land complex, 0 to 5 percent slopes. This map unit consists of deep, moderately well drained, nearly level to gently sloping Bonneau soils and areas of Urban land. Individual areas of this unit range from 20 to 200 acres in size; they are 50 to 70 percent Bonneau soils and 15 to 35 percent Urban land. Areas of Bonneau soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Bonneau soils have a surface layer of brown loamy fine sand about 6 inches thick. The subsurface layer is light yellowish brown and pale yellow loamy fine sand to a depth of 26 inches. The upper part of the subsoil is light yellowish brown sandy clay loam to a depth of 31 inches, and the lower part is mottled yellowish brown, brown, gray, and red sandy clay loam to a depth of 75 inches or more. Some small areas have been cut, built up, or smoothed during construction.

The Urban land part of the unit is covered by sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of well drained Wickham and Canton Bend soils. Also included, at lower elevations, are some small areas of soils that are similar to Bonneau soils but that are subject to rare flooding. The included soils make up about 15 percent of the map unit.

Bonneau soils are low in natural fertility and organic-matter content. Permeability is moderate, and available water capacity is moderate. Reaction is very strongly acid or strongly acid throughout except for the surface layer in limed areas. The root zone is deep and easily penetrated by plant roots. A water table is at a depth of about 3 feet during winter in most years except where the soil has been artificially drained.

Bonneau soils are used for building sites, lawns, gardens, and parks. They have fair potential for most locally adapted grasses, flowers, vegetables, and shrubs. Potential is limited by moderate available water capacity and low fertility. Occasional applications of fertilizer and water help overcome these limitations.

Bonneau soils have fair to poor potential for sanitary facilities because of wetness and seepage, and fair to good potential for most other urban uses. These soils are moderately restricted for dwellings with basements and for shallow excavations because of wetness. A few small areas at lower elevations have severe limitations for urban uses because of the hazard of rare flooding. Onsite investigation is essential to properly evaluate and plan the development of specific sites. Not assigned to a capability subclass or a woodland group.

15—Brantley fine sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 5 to 40 acres in size.

Typically, the surface layer is brown fine sandy loam about 8 inches thick. The upper part of the subsoil is dark brown clay to a depth of 20 inches, and the lower part is dark brown clay loam to a depth of about 50 inches. The underlying material is mottled yellowish brown and gray fine sandy loam to a depth of 72 inches or more.

Included with this soil in mapping are small areas of more sloping Brantley soils. Also included are areas of soils that have a less clayey subsoil and small areas of Tadlock soils. The included soils make up about 10 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. Reaction is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. The soil has good tilth and can be worked throughout a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has good potential for cultivated crops, hay, and pasture. Good tilth is maintained by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help reduce runoff and erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has fair potential for most urban uses. Low strength and moderate shrink-swell potential are moderate limitations for buildings, but these factors can be overcome by proper engineering design. The slow permeability of the subsoil is a severe limitation for septic tank absorption fields. Increasing the size of the absorption area helps overcome this limitation. Capability class I; woodland group 3o.

16—Brantley fine sandy loam, 2 to 5 percent slopes. This deep, well drained, gently sloping soil is on ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 5 to 100 acres in size.

Typically, the surface layer is brown fine sandy loam about 6 inches thick. The upper part of the subsoil is dark brown clay to a depth of 20 inches, and the lower part is dark brown clay loam to a depth of 52 inches.

The underlying material is mottled yellowish brown and gray fine sandy loam to a depth of 72 inches or more.

Included with this soil in mapping are areas of severely eroded Brantley soils. Also included are areas of soils that have a less clayey subsoil and small areas of Mantachie and Tadlock soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres in size.

This soil is medium in natural fertility and low in organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. The soil has good tilth and can be worked throughout a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has good potential for cultivated crops; with good management, high yields can be obtained. Potential is limited by slope and the irregular shape of the areas. The soil has good potential for hay and pasture. Erosion is a moderate hazard where cultivated crops are grown. Minimum tillage, cover crops, crop rotations, and terraces help reduce runoff and control erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has fair potential for most urban uses. Low strength and moderate shrink-swell potential are moderate limitations for buildings, but these limitations can be overcome by proper engineering design. The slow permeability of the subsoil is a severe limitation for septic tank absorption fields. Increasing the size of the absorption area helps overcome this limitation. Capability subclass IIe; woodland group 3o.

17—Brantley fine sandy loam, 5 to 10 percent slopes. This deep, well drained, sloping soil is on ridgetops and the upper parts of side slopes of Coastal Plain uplands. Slopes are complex and convex. Individual areas are 5 to 50 acres in size.

Typically, the surface layer is brown fine sandy loam about 4 inches thick. The upper part of the subsoil, to a depth of about 20 inches, is dark brown clay, and the lower part, to a depth of 45 inches, is brown clay loam mottled with red and yellowish brown. The underlying material is mottled yellowish brown and gray fine sandy loam to a depth of 72 inches or more.

Included with this soil in mapping are a few small areas of Brantley soils that are severely eroded and typically have a more clayey surface layer. Also included are areas of soils that have a less clayey subsoil and small areas of Lucy, Mantachie, and Tadlock soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 2 acres.

This soil is medium in natural fertility and low in organic-matter content. Reaction is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. Runoff is rapid, and the root zone is deep and easily penetrated by plant roots.

This soil has fair potential for cultivated crops. Its potential is limited by the small size and irregular shape of the areas and by the slope. The soil has good potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil. Erosion is a moderate to severe hazard where cultivated crops are grown. Minimum tillage, cover crops, terraces, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has fair potential for most urban uses. Low strength, moderate shrink-swell potential, and slope are moderate to severe limitations for structures. These factors can be partially overcome by proper engineering design and installation procedures. The slow permeability of the subsoil is a severe limitation for septic tank absorption fields. Increasing the size of the absorption area helps overcome this limitation. Capability subclass IIIe; woodland group 3o.

18—Brantley-Lucy association, hilly. This unit consists of deep, well drained soils in a regular and repeating pattern. These soils are on mostly wooded, narrow side slopes around drainageways on Coastal Plain uplands. Brantley soils are on the upper parts of side slopes, and Lucy soils are on the lower parts. Slope ranges from 8 to 20 percent. Areas of the unit average about 250 acres, and individual areas of each soil range from 4 to 20 acres.

Brantley soils and similar soils make up about 45 percent of the association. Typically, the surface layer is dark grayish brown fine sandy loam about 9 inches thick. The upper part of the subsoil is yellowish red clay and clay loam to a depth of 38 inches, and the lower part is strong brown sandy clay loam to a depth of 50 inches. The underlying material is fine sandy loam to a depth of 72 inches or more.

Brantley soils are medium in natural fertility and low in organic matter content. They are strongly acid or very strongly acid throughout. They are slowly permeable and have high available water capacity.

Lucy soils and similar soils make up about 37 percent of the association. Typically, the surface layer is dark grayish brown loamy fine sand about 4 inches thick. The subsurface layer is brown loamy fine sand to a depth of 22 inches. The subsoil is yellowish red clay loam and yellowish red sandy clay loam that extends to a depth of 66 inches or more.

Lucy soils are low in natural fertility and organic-matter content. Permeability is moderate, and available water capacity is moderate to low. Reaction is very strongly acid or strongly acid throughout.

Bama, Benndale, and Mantachie soils make up about 18 percent of the map unit. Bama and Benndale soils

are on side slopes, and Mantachie soils are on narrow bottoms.

This unit has poor potential for cultivated crops, hay, and pasture. The moderately steep slopes, severe erosion hazard, irregular shape of the areas, and the moderate to low available water capacity of the Lucy soils are limitations for these uses.

Most of the acreage is woodland. The soils have good potential for loblolly, longleaf, and slash pines. The use of equipment is moderately restricted and the seedling mortality rate is moderate on the sandy Lucy soils.

Potential for most urban uses is fair to poor because of moderately steep slopes. In addition, Brantley soils have moderate limitations for buildings because of low strength and moderate shrink-swell potential, and severe limitations for septic tank filter fields because of slow permeability. Brantley soils in capability subclass VIe; woodland group 3o. Lucy soils in capability subclass IVs; woodland group 3s.

19—Canton Bend fine sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on stream terraces of major rivers and creeks. Slopes are smooth. Individual areas are 10 to 100 acres in size.

Typically, the surface layer is brown fine sandy loam about 7 inches thick. The upper part of the subsoil is yellowish red silty clay loam to a depth of 33 inches, the middle part is yellowish red clay loam to a depth of 52 inches, and the lower part is mottled yellowish red, pale brown, and yellowish brown loam to a depth of 62 inches. The underlying material, to a depth of 80 inches or more, is stratified yellowish red, pale brown, and yellowish brown loam and fine sandy loam.

Included with this soil in mapping are small areas of more sloping Canton Bend soils. Also included are small areas of somewhat poorly drained Gaylesville soils, poorly drained Minter soils, and well drained Wickham soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. The soil has good tilth and can be worked throughout a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots. Most areas are occasionally flooded for brief periods from December to April.

This soil has good potential for cultivated crops, hay, and pasture. Good tilth is easily maintained by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help to reduce runoff and erosion.

Potential is good for loblolly pine, shortleaf pine, sweetgum, and yellow-poplar. There are no significant limitations to woodland use and management.

This soil has poor potential for most urban uses because of the flood hazard. This limitation is difficult to overcome. Capability class I; woodland group 3o.

20—Canton Bend fine sandy loam, 2 to 5 percent slopes. This deep, well drained, gently sloping soil is on terraces of major rivers and creeks. Slopes are smooth and convex. Individual areas are 5 to 80 acres in size.

Typically, the surface layer is brown fine sandy loam about 4 inches thick. The upper part of the subsoil is yellowish red clay loam to a depth of about 30 inches, the middle part is mottled yellowish red and yellowish brown clay loam to a depth of 42 inches, and the lower part is strong brown fine sandy loam to a depth of about 66 inches. The underlying material, to a depth of 80 inches or more, is stratified brown and yellowish brown fine sandy loam.

Included with this soil in mapping are areas of more sloping Canton Bend soils that have an eroded surface layer. Some of these areas are above the known flood level. Also included are small areas of Gaylesville, Minter, and Wickham soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. The soil has good tilth and can be worked throughout a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots. Most areas are occasionally flooded for brief periods from December to April.

This soil has good potential for cultivated crops, hay, and pasture. Good tilth can be maintained by returning crop residue to the soil. Erosion is a moderate hazard where cultivated crops are grown. Minimum tillage, cover crops, terraces, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly pine, shortleaf pine, sweetgum, and yellow-poplar. There are no significant limitations to woodland use and management.

This soil has poor potential for most urban uses because of the flood hazard. This limitation is difficult to overcome. Capability subclass IIe; woodland group 3o.

21—Canton Bend-Urban land complex, 0 to 5 percent slopes. This map unit consists of deep, well drained, nearly level to gently sloping Canton Bend soils and areas of Urban land. Individual areas of this unit range from 10 to 50 acres in size; they are 40 to 65 percent Canton Bend soils and 15 to 40 percent Urban land. Areas of Canton Bend soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Canton Bend soils have a surface layer of brown fine sandy loam about 7 inches thick. The upper

part of the subsoil is yellowish red silty clay loam to a depth of 33 inches, the middle part is yellowish red clay loam to a depth of 52 inches, and the lower part is mottled yellowish red, pale brown, and yellowish brown loam to a depth of 62 inches. The underlying material is stratified yellowish red, pale brown, and yellowish brown loam and fine sandy loam that extend to a depth of 80 inches or more. Some small areas have been cut, built up, or smoothed during construction.

The Urban land part of the unit is covered by sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. The areas have a high rate of runoff because the soils are covered.

Included in mapping are areas of well drained Wickham soils, somewhat poorly drained Gaylesville soils, and poorly drained Minter soils. The included Wickham soils make up about 20 percent of the open area of the unit, and the other included soils make up about 5 percent of the unit.

Canton Bend soils are medium in natural fertility and low in organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. These soils are slowly permeable. The root zone is deep and easily penetrated by plant roots. These soils are in flood-prone areas and are subject to rare, brief flooding during periods of unusually high rainfall.

Canton Bend soils are used for building sites, lawns, gardens, and parks. They have good potential for most grasses, flowers, vegetables, and shrubs. The potential for recreational development is good to fair.

Canton Bend soils have poor potential for building sites and most other urban uses because of the hazard of rare flooding. Filling with offsite material helps overcome this limitation. Some areas are above the known flood level; onsite investigation is essential to properly evaluate and plan development of specific sites. Not assigned to a capability subclass or a woodland group.

22—Congaree loam, 0 to 4 percent slopes. This deep, well drained to moderately well drained, nearly level to gently sloping soil is on flood plains of major rivers and creeks. Mapped areas are long and narrow, and slopes are smooth. Individual areas are about 5 to 50 acres.

Typically, the surface layer is dark yellowish brown loam about 7 inches thick. The underlying material to a depth of 28 inches is dark yellowish brown and dark brown loam that contains strata of brown fine sandy loam, and to a depth of 72 inches or more is brown silty clay loam.

Included with this soil in mapping are areas of soils that are similar to Congaree soils except that they have a more clayey substratum and areas of soils that have slopes of more than 4 percent. Also included are small areas of an unnamed, somewhat poorly drained soil in sloughs. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is high in natural fertility and moderately low in organic-matter content. Reaction ranges from strongly acid to neutral. Permeability is moderate, and available water capacity is high. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is present most years at a depth of 3 to 4 feet from November through April. Frequent, brief flooding occurs from November through April.

This soil has good potential for cultivated crops, hay, and pasture. Its potential is reduced by the flood hazard, but crops are seldom damaged. Good tilth is best maintained by returning crop residue to the soil. Erosion is a hazard only where stream scouring occurs.

Potential is good for loblolly pine, yellow-poplar, eastern cottonwood, and American sycamore. The use of equipment is moderately restricted during winter because of wetness and flooding.

This soil has poor potential for most urban uses because of flooding. This limitation is difficult and expensive to overcome. Capability subclass IIw; woodland group 1o.

23—Demopolis silty clay loam, 3 to 12 percent slopes. This shallow, well drained, gently sloping to strongly sloping soil is on uplands in the Blackland Prairie. Slopes are smooth and convex. Individual areas are 4 to 150 acres.

Typically, the surface layer is grayish brown silty clay loam about 6 inches thick. The underlying material to a depth of 10 inches is grayish brown silty clay loam that contains many thin, flat fragments of light gray chalk, and to a depth of 48 inches or more is light gray, partially weathered chalk that is difficult to cut with a spade.

Included with this soil in mapping are small areas of more sloping, very severely eroded, or gullied Demopolis soils. Also included are small areas of moderately well drained Oktibbeha soils and well drained Sumter soils. There are a few areas of a shallow, acid, clayey soil. The included soils make up about 25 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. It is moderately alkaline and calcareous throughout. Permeability is moderately slow, and available water capacity is very low. The soil has fair tilth but can be cultivated through a fairly narrow range of moisture content. The root zone is shallow, but some roots follow the cracks in the chalk.

This soil has poor potential for cultivated crops, hay, and pasture. Its potential is limited by slope, the severe erosion hazard, the shallow root zone, and the very low available water capacity. If cultivated crops are grown, minimum tillage and cover crops are needed to reduce runoff and help control erosion.

This soil is not suited to pine trees. It has fair potential for eastern redcedar. A severe seedling mortality rate is the major limitation to woodland use and management.

This soil has poor potential for most urban uses because of slope, moderately slow permeability, and depth to rock. These limitations are difficult and expensive to overcome. Capability subclass VIe; woodland group 4d.

24—Demopolis cobbly silty clay loam, 5 to 15 percent slopes. This shallow, well drained, sloping to moderately steep soil is on elongated knolls on uplands in the Blackland Prairie. Slopes are complex and convex. Individual areas are 3 to 40 acres in size.

Typically, the surface layer is very dark gray cobbly silty clay loam about 5 inches thick. About 5 to 55 percent of the surface is covered by limestone cobbles, locally called "horsebone rock." The subsurface layer, which extends to a depth of about 12 inches, is about 25 percent very dark gray silty clay loam and about 75 percent limestone fragments. The underlying material is light gray, fractured limestone to a depth of 36 inches or more.

Included with this soil in mapping are small areas of soils that are similar to Demopolis soils except that they are deeper or shallower to limestone. The shallower soils typically are eroded. Also included are small areas of Houston, Oktibbeha, and Sumter soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and moderately low in organic-matter content. Reaction is moderately alkaline. Permeability is moderately slow, and available water capacity is very low. The soil has poor tilth and can be worked through only a fairly narrow range of moisture content. The limestone cobbles in the surface layer and the shallow depth to rock severely limit tillage. The root zone is shallow.

This soil has poor potential for cultivated crops, hay, and pasture. Its potential is limited by depth to rock, very low available water capacity, cobbles, and slope.

This soil is not suited to pine trees. It has fair potential for eastern redcedar. A severe seedling mortality rate is the most significant limitation to woodland use and management.

This soil has poor potential for most urban uses because of depth to rock, moderately slow permeability, and slope. In most areas the underlying rock is difficult to rip. These limitations are difficult and expensive to overcome. Capability subclass VIe; woodland group 4d.

25—Gaylesville loam. This deep, somewhat poorly drained, nearly level soil is on terraces of major rivers and creeks. Slopes are smooth and range from 0 to 2 percent. Individual areas are 5 to 125 acres in size.

Typically, the surface layer is dark grayish brown loam about 6 inches thick. The upper part of the subsoil, to a depth of 12 inches, is yellowish brown loam that has strong brown and light gray mottles. The lower part, to a depth of 68 inches, is light brownish gray clay and light gray clay and clay loam mottled in shades of red and brown. The underlying material, to a depth of 78 inches or more, is light gray loamy fine sand mottled with yellowish brown.

Included with this soil in mapping are soils that are similar to Gaylesville soils except that they are above the known flood level. Also included are small areas of Canton Bend, Minter, and Wickham soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is slow, and available water capacity is moderate to high. The soil has good tilth and can be worked through a fairly wide range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is present most years at a depth of 1 to 1.5 feet from November to March. The soil is subject to frequent flooding of brief duration during winter and spring.

This soil has poor potential for cultivated crops. Its potential is limited because of the hazard of flooding and the wetness, which delays planting and harvesting. The soil has fair potential for hay and pasture. Drainage improves the yields of most crops. Good tilth is best maintained by returning crop residue to the soil.

Potential is good for loblolly pine, sweetgum, and yellow-poplar. The use of equipment is moderately restricted by wetness, and the windthrow hazard is moderate. These are the major limitations to woodland use and management.

This soil has poor potential for most urban uses. Slow permeability, wetness, and the hazard of flooding are severe limitations. These limitations are difficult and expensive to overcome. Capability subclass IVw; woodland group 3w.

26—Gaylesville-Urban land complex. This map unit consists of deep, somewhat poorly drained, nearly level Gaylesville soils and areas of Urban land. Slope ranges from 0 to 2 percent. Individual areas of this unit range from 10 to 100 acres in size; they are about 50 to 70 percent Gaylesville soils and 20 to 40 percent Urban land. Areas of Gaylesville soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Gaylesville soils have a surface layer of dark grayish brown loam about 6 inches thick. The upper part of the subsoil, to a depth of 12 inches, is yellowish brown loam that has strong brown and light gray mottles. The lower part, to a depth of 68 inches, is light brownish gray clay and light gray clay and clay loam mottled in shades of red and brown. The underlying material, to a depth of 78 inches or more, is light gray loamy fine sand

mottled with yellowish brown. Some small areas have been cut, built up, or smoothed during construction.

The Urban land part of the unit is covered by sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of poorly drained Minter soils and well drained Canton Bend and Wickham soils. The included soils make up about 10 percent of the map unit.

Gaylesville soils have medium natural fertility and low organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is slow, and available water capacity is moderate to high. A water table is at a depth of 1 to 1.5 feet during most years from November to March. These soils are in flood-prone areas and are subject to frequent flooding during winter and spring.

Gaylesville soils are used for building sites, lawns, gardens, and parks. They have fair potential for most locally adapted grasses, flowers, vegetables, and shrubs. They are somewhat limited by wetness. Drainage improves the use of these soils in most areas. Potential for recreational development is fair to poor because of flooding and wetness.

Gaylesville soils have severe limitations for building sites and other urban uses because of wetness and the hazard of flooding. Filling with offsite material and draining the areas help overcome these limitations. Some areas in this unit are above the known flood level; onsite investigation is essential to properly evaluate and plan the development of specific sites. Not assigned to a capability subclass or a woodland group.

27—Greenville loamy fine sand, 5 to 10 percent slopes. This deep, well drained, sloping soil is on ridgetops and side slopes of Coastal Plain uplands. Mapped areas are in the highest positions in the landscape. Slopes are complex and convex. Individual areas are 8 to 60 acres in size.

Typically, the surface layer is brown loamy fine sand about 7 inches thick. The upper part of the subsoil is dark red clay to a depth of 26 inches. The lower part, to a depth of 72 inches or more, is dark red sandy clay.

Included with this soil in mapping are a few areas of eroded Greenville soils that have a thin surface layer of sandy clay loam; there are a few gullies in some of these areas. There are a few included areas of more sloping and less sloping Greenville soils. Also included are small areas of Lucy and Luverne soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is high. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has fair potential for cultivated crops. Its potential is limited by the small size of the areas, slope, and the moderate to severe hazard of erosion. The soil has good potential for hay and pasture. Good tilth is easily maintained by returning crop residue to the soil. Minimum tillage, terraces, cover crops, and crop rotations help reduce runoff and control erosion.

This soil has good potential for loblolly, longleaf, and slash pines (fig. 5). There are no significant limitations to woodland use and management.

This soil has fair potential for most urban uses. Low strength is a moderate limitation for building sites, but this limitation can be overcome by proper engineering design. The moderate permeability of the subsoil is a moderate limitation for septic tank absorption fields. This can be partially overcome by increasing the size of the absorption field. Capability subclass IIIe; woodland group 3o.

28—Gullied land. This unit consists of severely gullied areas in calcareous, partially weathered Selma chalk. Mapped areas support little or no vegetation. Most areas consist of broad, U-shaped gullies that are dissected by many smaller, V-shaped gullies. Gullies generally range from 3 to 20 feet in depth. Mapped areas are narrow to broad, irregularly shaped, and range from 5 to 140 acres in size.

Included with Gullied land in mapping are knolls and narrow, winding areas of Demopolis, Oktibbeha, and Sumter soils that are too small to use. The included soils make up less than 15 percent of this map unit in separate areas generally of less than 2 acres.

This unit has poor potential for farm, urban, or woodland uses. It would require filling and reshaping with heavy machinery for most agricultural and urban uses. The expense of filling and reshaping discourages reclamation. Reclaimed areas are best suited to pasture or hayland; however, good management is necessary for profitable operations. Not assigned to a capability subclass or a woodland group.

29—Houston clay, 1 to 5 percent slopes. This deep, moderately well drained, gently sloping soil is on uplands in the Blackland Prairie. Slopes are smooth and convex. Individual areas are 5 to 500 acres in size.

Typically, the surface layer is very dark gray clay about 10 inches thick. The next layers are dark olive gray clay to a depth of 25 inches and olive gray clay to a depth of 42 inches. The underlying material is olive and light olive brown clay to a depth of 72 inches or more. Gray and brown mottles are in some layers below a depth of 25 inches.

Included with this soil in mapping are small areas of well drained Demopolis and Sumter soils and somewhat

poorly drained Leeper and Vaiden soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and moderately low in organic-matter content. Reaction ranges from neutral to moderately alkaline throughout except for the surface layer, which is slightly acid in places. Permeability is very slow, and available water capacity is moderate to high. This soil has poor tilth and can be worked through only a very narrow range of moisture content. The root zone is deep. A seasonal water table is at a depth of 4 to 6 feet most years from January through March.

This soil has fair potential for cultivated crops; high yields can be obtained. Potential is somewhat limited by the narrow range of moisture content in which the soil is suitable for tillage. If this soil is tilled when too wet, large clods form; if it is tilled when too dry, implements penetrate the surface only with difficulty. Preparation of good seedbeds is often difficult. In some years, small grains drown or freeze during winter. Tilth is improved by returning crop residue to the soil. This soil has good potential for hay and pasture crops. Erosion is a moderate hazard when cultivated crops are grown. Minimum tillage, cover crops, and crop rotations help reduce runoff and control erosion.

Because this soil is alkaline, it has poor potential for pine trees. It has fair potential for eastern redcedar. The clayey texture of the soil moderately restricts the use of equipment during wet seasons, and the seedling mortality rate is moderate.

Potential for most urban uses is poor. The very high shrink-swell potential (fig. 6) and low strength of the soil are severe limitations for building site development. Special design and installation procedures are required to overcome these limitations. The very slow permeability of the soil is a severe limitation for septic tank absorption fields. This limitation is very difficult to overcome. Capability subclass IIe; woodland group 4c.

30—Kipling loam, 0 to 1 percent slopes. This deep, somewhat poorly drained, nearly level soil is on broad terraces and uplands in the Blackland Prairie. Slopes are smooth. Individual areas of this soil are 3 to 250 acres in size.

Typically, the surface layer is grayish brown loam about 5 inches thick. The upper part of the subsoil, to a depth of 12 inches, is yellowish brown clay loam that has gray mottles; the middle part, to a depth of 25 inches, is mottled gray, red, and yellowish brown clay loam; and the lower part, to a depth of 43 inches, is mottled light gray, yellowish brown, and red clay loam. The underlying material is mottled yellowish brown, light olive brown, and gray clay to a depth of 96 inches or more.

Included with this soil in mapping are small areas of more sloping Kipling soils that have a surface layer of fine sandy loam or silty clay loam. Also included, on terraces that are subject to flooding, are a few areas of soils that are similar to Kipling soils. Also included are small areas of Vaiden soils and areas of a more poorly drained soil. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. Reaction ranges from medium acid to very strongly acid throughout, except for the surface layer in limed areas. Permeability is very slow, and available water capacity is high. The soil has fair tilth and can be worked through a fairly wide range in moisture content. The root zone is deep and can be penetrated by plant roots. A water table is at a depth of 1.5 to 3 feet during most years from January through March.

This soil has fair potential for most cultivated crops; high yields can be obtained. Its potential is limited by wetness, which delays planting and sometimes interferes with harvesting. It has poor potential for small grains and fair potential for hay and pasture because of wetness. In many areas the suitability of this soil for crops can be improved with drainage. Good tilth is maintained by returning crop residue to the soil.

This soil has good potential for loblolly pine, sweetgum, and some oaks. It has a moderate seedling mortality rate, moderate windthrow hazard, and moderate equipment limitations because of seasonal wetness and the clayey texture of the soil.

The potential for most urban uses is poor. The very high shrink-swell potential and low strength are severe limitations for building site development. Special engineering design and installation procedures are needed to overcome these limitations. The very slow permeability is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. Capability subclass IIw; woodland group 2c.

31—Kipling loam, 1 to 5 percent slopes. This deep, somewhat poorly drained, gently sloping soil is on terraces and uplands in the Blackland Prairie. Slopes are smooth and convex. Individual areas are 5 to 100 acres.

Typically, the surface layer is grayish brown loam about 5 inches thick. The upper part of the subsoil, to a depth of 16 inches, is yellowish brown clay loam that has gray and yellowish red mottles, and the lower part, to a depth of 40 inches, is mottled yellowish brown, red, and gray clay loam. The underlying material is mottled red, brown, and gray clay to a depth of 72 inches or more.

Included with this soil in mapping are small areas of more sloping Kipling soils and a few areas of eroded soils that have a surface layer of clay loam. There are a few gravelly areas. Also included are small areas of moderately well drained Angie and Oktibbeha soils and somewhat poorly drained Vaiden soils. The included soils soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. Reaction ranges from medium acid to

very strongly acid throughout except for the surface layer in limed areas. Permeability is very slow, and available water capacity is high. The soil has fair tilth and can be worked through a fairly wide range of moisture content. The root zone is deep and can be penetrated by plant roots. A water table is at a depth of 1.5 to 3 feet during most years from January through March.

This soil has fair potential for most cultivated crops, hay, and pasture; high yields can be obtained. Potential is limited by wetness, which delays planting. The soil has poor potential for small grains because of seasonal wetness. Good tilth is maintained by returning crop residue to the soil. Where row crops are grown, erosion is a moderate hazard. Minimum tillage, terraces, cover crops, and crop rotations help reduce runoff and control erosion.

This soil has good potential for loblolly pine, sweetgum, and some oaks. It has a moderate seedling mortality rate, windthrow hazard, and equipment limitation because of seasonal wetness and the clayey texture of the soil.

This soil has poor potential for most urban uses. The very high shrink-swell potential and low strength are severe limitations for building site development. Special engineering design and installation procedures are needed to overcome these limitations. The very slow permeability is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. Capability subclass IIIe; woodland group 2c.

32—Kipling-Urban land complex, 0 to 5 percent slopes. This map unit consists of deep, somewhat poorly drained, nearly level to gently sloping Kipling soils and areas of Urban land. Individual areas of this map unit range from 7 to 50 acres in size; they are 50 to 70 percent Kipling soils and 20 to 40 percent Urban land. Areas of Kipling soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Kipling soils have a surface layer of grayish brown loam about 5 inches thick. The upper part of the subsoil, to a depth of 12 inches, is yellowish brown clay loam that has gray mottles; the middle part, to a depth of 25 inches, is mottled gray, red, and yellowish brown clay loam; and the lower part, to a depth of 43 inches, is mottled light gray, yellowish brown, and red clay loam. The underlying material is mottled yellowish brown, light olive brown, and gray clay to a depth of 96 inches or more. Some small areas have been cut, built up, or smoothed during construction.

The Urban land part of the unit is covered by sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of moderately well drained Angie and Oktibbeha soils and somewhat poorly drained Vaiden soils. The included soils make up about 10 percent of the map unit.

Kipling soils are medium in natural fertility and low in organic-matter content. Reaction ranges from medium acid to very strongly acid except for the surface layer in limed areas. Permeability is very slow, and available water capacity is high. Kipling soils have a seasonal water table most years at a depth of 1.5 to 3 feet from January through March.

Kipling soils are used for building sites, lawns, gardens, and parks. They have good potential for most locally adapted grasses, flowers, vegetables, and shrubs. They are somewhat limited by wetness. The potential for recreational development is fair because of seasonal wetness and very slow permeability.

Kipling soils have poor potential for most urban uses. The very high shrink-swell potential and low strength are severe limitations for building site development. Special engineering design and installation procedures are required to overcome these limitations. The very slow permeability is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. Onsite investigation is essential to properly evaluate and plan the development of specific sites. Not assigned to a capability subclass or a woodland group.

33—Leeper silty clay. This deep, somewhat poorly drained, nearly level soil is on flood plains of creeks in the Blackland Prairie. Slopes are smooth and range from 0 to 1 percent. Individual areas are 10 to 500 acres.

Typically, the surface layer is dark grayish brown silty clay about 14 inches thick. The subsoil, to a depth of 60 inches, is dark grayish brown clay that has olive brown and gray mottles. The underlying material is mottled dark grayish brown, yellowish brown, and gray clay to a depth of 90 inches or more.

Included with this soil in mapping are areas of soils that are similar to Leeper soils except that they have a more clayey subsoil. Some areas are poorly drained. Also included are small areas of Kipling and Vaiden soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and moderately low in organic-matter content. Reaction ranges from slightly acid to moderately alkaline throughout. Permeability is very slow, and available water capacity is high. The soil has poor tilth and can be worked through only a narrow range of moisture content. The root zone is deep. A water table is present most years at a depth of 1 to 2 feet from January through March. The soil is subject to frequent, brief flooding from January through March.

This soil has fair potential for most cultivated crops; high yields can be obtained. Potential is fair for hay and pasture. Potential is limited by wetness, flooding, and poor workability. Flooding and wetness in spring often delay planting. This soil has poor potential for small

grains because of seasonal flooding and wetness. Cover crops and crop rotations help improve tilth.

This soil generally is not suited to pine trees. It has good potential for eastern cottonwood, green ash, sweetgum, and sycamore. A severe seedling mortality rate and restrictions to use of equipment are significant limitations to woodland use and management.

This soil has poor potential for most urban uses because of very slow permeability, wetness, high shrink-swell potential, and the hazard of flooding. These factors are difficult and expensive to overcome. Capability subclass IVw; woodland group 1w.

34—Lucedale fine sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth. Individual areas of this soil are 20 to 150 acres.

Typically, the surface layer is dark reddish brown fine sandy loam about 7 inches thick. The subsoil is dark red sandy clay loam to a depth of 72 inches and red fine sandy loam to a depth of 90 inches or more.

Included with this soil in mapping are small areas of well drained Pine Flat soils and moderately well drained Savannah soils. Also included are small areas of a somewhat poorly drained soil in depressions. The included soils make up about 10 to 15 percent of this map unit in areas generally of less than 2 acres.

This soil is low in natural fertility and organic-matter content. Reaction is strongly acid or very strongly acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is high. The soil has good tilth and can be worked over a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has good potential for cultivated crops, hay, and pasture. Good tilth is easily maintained by returning crop residue to the soil.

Potential is good for loblolly, longleaf, and slash pines. There are no significant limitations to woodland use and management.

This soil has good potential for most urban uses; there are no significant limitations. Capability class I; woodland group 2o.

35—Lucedale fine sandy loam, 2 to 5 percent slopes. This deep, well drained, gently sloping soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 5 to 50 acres in size.

Typically, the surface layer is dark reddish brown fine sandy loam about 6 inches thick. The subsoil is dark red sandy clay loam to a depth of 72 inches or more.

Included with this soil in mapping are some small areas of eroded Lucedale soils and some small areas of a soil that is similar to Lucedale soils except that the subsoil is gravelly. Also included are small areas of well drained Pine Flat soils and moderately well drained Savannah soils. The included soils make up about 15 to 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is high. The soil has good tilth and can be worked through a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has good potential for cultivated crops, hay, and pasture. It has a moderate hazard of erosion when used for cultivated crops. Good tilth is easily maintained by returning crop residue to the soil. Minimum tillage, terraces, cover crops, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly, longleaf, and slash pines. There are no significant limitations to woodland use and management.

This soil has good potential for urban uses; there are no significant limitations. Capability subclass IIe; woodland group 2o.

36—Lucedale fine sandy loam, 5 to 8 percent slopes. This deep, well drained, sloping soil is on narrow ridgetops and upper parts of side slopes of Coastal Plain uplands. Slopes generally are complex and convex. Individual areas are 5 to 20 acres in size.

Typically, the surface layer is dark reddish brown fine sandy loam about 6 inches thick. The subsoil is dark red loam and sandy clay loam to a depth of 72 inches or more.

Included with this soil in mapping are small areas of Lucedale soils that have a severely eroded surface layer. Also included are small areas of a soil that is similar to Lucedale soils except that the subsoil is gravelly. These included soils make up about 15 percent of the map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. Reaction is strongly acid or very strongly acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is high. The soil has good tilth and can be cultivated over a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has fair potential for cultivated crops. Its potential is limited because of slope, the moderate erosion hazard, and the small size and irregular shape of the areas. Good tilth is maintained by returning crop residue to the soil. Minimum tillage, cover crops, terraces, and crop rotations help reduce runoff and control erosion. The soil has good potential for hay and pasture.

Potential is good for loblolly, longleaf, and slash pines. There are no significant limitations to woodland use or management.

This soil has good potential for most urban uses. Slope is a moderate limitation for small commercial

buildings, but this limitation can be easily overcome by proper engineering design. Capability subclass IIIe; woodland group 2o.

37—Lucy loamy fine sand, 0 to 5 percent slopes. This deep, well drained, nearly level to gently sloping soil is on ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 5 to 20 acres in size.

Typically, the surface layer is brown loamy fine sand about 7 inches thick. The subsurface layer is yellowish brown loamy fine sand to a depth of about 22 inches. The subsoil is yellowish red sandy clay loam and clay loam to a depth of about 73 inches or more.

Included with this soil in mapping are soils that are similar to Lucy soils except that they have a thinner surface layer or a thinner subsoil. Also included are small areas of Bama and Troup soils. Included soils make up about 15 percent of the map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is rapid in the surface layer and moderate in the subsoil. Available water capacity is low to moderate. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has fair potential for row crops, hay, and pasture. Its potential is limited by the low to moderate available water capacity and the small size of the areas. Good tilth is best maintained by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations reduce runoff and erosion.

Potential is good for loblolly, longleaf, and slash pines. Moderate equipment limitations and the moderate seedling mortality rate are the major limitations to woodland use and management.

This soil has good potential for most urban uses. It has a severe limitation for sewage lagoons because of seepage. Capability subclass IIs; woodland group 3s.

38—Lucy loamy fine sand, 5 to 10 percent slopes. This deep, well drained, sloping soil is on ridgetops and side slopes of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 5 to 50 acres in size.

Typically, the surface layer is brown loamy fine sand about 6 inches thick. The subsurface layer, to a depth of about 24 inches, is brown loamy fine sand that contains small pockets of clean sand grains. The upper part of the subsoil is yellowish red and red sandy loam to a depth of 29 inches. The lower part is red sandy clay loam to a depth of 83 inches or more; it has brownish yellow mottles in the lower part.

Included with this soil in mapping are soils that are similar to Lucy soils except that they have a thinner surface layer or a thinner subsoil. Also included are small areas of Bama and Troup soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is strongly acid except for the surface layer in limed areas. Permeability is rapid in the surface layer and moderate in the subsoil. Available water capacity is low to moderate. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has fair potential for row crops, hay, and pasture. Its potential is limited by slope, the low to moderate available water capacity, and the small size of some areas. Good tilth is easily maintained by returning crop residue to the soil. Erosion is a moderate hazard if row crops are grown. Minimum tillage, cover crops, terraces, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly, longleaf, and slash pines. Moderate equipment limitations and the moderate seedling mortality rate are the major limitations to woodland use and management.

This soil has good potential for most urban uses. It has a severe limitation for sewage lagoons because of seepage. Slope is a moderate limitation for small commercial buildings, but this limitation can be overcome by proper engineering design. Capability subclass IIIs; woodland group 3s.

39—Luverne loamy sand, 4 to 10 percent slopes. This deep, well drained, gently sloping to strongly sloping soil is on narrow ridgetops and side slopes of Coastal Plain uplands. Slopes are complex and convex. Individual areas are 5 to 40 acres in size.

Typically, the surface layer is brown loamy sand about 5 inches thick. The upper part of the subsoil is red clay to a depth of 17 inches, the middle part is red clay loam to a depth of 24 inches, and the lower part is red sandy clay loam to a depth of 32 inches. The underlying material is stratified yellowish red sand and gray clay to a depth of 72 inches or more.

Included with this soil in mapping are small areas of eroded Luverne soils that are marked by small gullies. Also included are small areas of Greenville soils. The included soils make up about 10 percent of the map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is moderately slow, and available water capacity is low to moderate. The soil has good tilth and can be worked over a wide range of moisture content. The root zone is moderately deep and can be penetrated by plant roots.

This soil has fair to poor potential for row crops and small grains, but moderate yields can be obtained. Its potential is limited by the small size of some areas, by the severe erosion hazard, and by slope. The soil has

fair potential for hay and pasture. Good tilth can be maintained by returning crop residue to the soil. Minimum tillage, cover crops, terraces, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly, longleaf, and slash pines. Moderate equipment limitations are the major limitations to woodland use and management.

This soil has poor potential for most urban uses. Low strength and the clayey subsoil are severe limitations for most building site development. Lateral water seepage on the lower slopes is an additional hazard. The moderately slow permeability is a severe limitation for septic tank absorption fields. These factors are difficult and expensive to overcome. Capability subclass IVe; woodland group 3c.

40—Luverne-Greenville association, hilly. This unit consists of deep, well drained soils in a regular and repeating pattern on narrow ridgetops and side slopes of Coastal Plain uplands. Luverne soils are mostly on the steeper, lower parts of side slopes, and Greenville soils are on the more gently sloping ridgetops and adjacent upper parts of side slopes. Slopes range from 8 to 30 percent and are complex and convex. Areas of this unit range to as much as 3,000 or more acres, and individual areas of each soil range from 5 to 50 acres.

Luverne soils and similar soils make up about 51 percent of the association. Typically, the surface layer is dark grayish brown loamy sand about 5 inches thick. The upper part of the subsoil, to a depth of 17 inches, is red clay; the middle part, to a depth of 24 inches, is red clay loam mottled with yellowish brown; and the lower part, to a depth of about 32 inches, is red sandy clay loam. The underlying material is stratified yellowish red fine sandy loam and gray clay to a depth of 72 inches or more.

Luverne soils are low in natural fertility and organic-matter content. They are strongly acid or very strongly acid throughout. Permeability is moderately slow, and available water capacity is low to moderate.

Greenville soils and similar soils make up about 20 percent of this association. Typically, the surface layer is brown loamy fine sand about 7 inches thick. The subsoil extends to a depth of 72 inches or more. It is dark red sandy clay in the upper part and dark red sandy clay and sandy clay loam in the lower part.

Greenville soils are low in natural fertility and organic-matter content. Permeability is moderate, and available water capacity is high. These soils are strongly acid throughout.

The well drained Lucy soils on uplands and the somewhat poorly drained Mantachie soils in long, narrow drainageways make up about 29 percent of the unit.

This unit has poor potential for most agricultural uses. Slope and the hazard of erosion severely limit use of the soils as cropland or pasture.

Most of the acreage is woodland. The soils have good potential for loblolly, longleaf, and slash pines. The steep slopes of the Luverne soils moderately restrict the use of equipment.

Potential for most urban uses is fair to poor. The steep slopes, moderately slow permeability, and low strength of the Luverne soils are severe limitations for most urban uses. Also, some areas of the steeper Luverne soils are subject to sliding during seasons of high rainfall. Similarly, the slope, low strength, and moderate permeability of the Greenville soils are moderate limitations for many urban uses. Luverne soils in capability subclass VIIe; woodland group 3c. Greenville soils in capability subclass IVe; woodland group 3o.

41—Mantachie loam. This deep, somewhat poorly drained, nearly level soil is on narrow flood plains along creeks and drainageways in the Coastal Plain. Slopes are 0 to 2 percent and are smooth except where the areas have been cut by old stream channels. Individual areas are 20 to 200 acres.

Typically, the surface layer is brown loam about 7 inches thick. The next layer, to a depth of 14 inches, is brown loam that contains strata of pale brown fine sandy loam. The upper part of the underlying material, to a depth of 63 inches, is grayish brown silt loam that contains brown mottles and strata of fine sandy loam and loamy sand. The lower part, to a depth of 90 inches or more, is light gray loam mottled in shades of brown.

Included with this soil in mapping are areas of soils that are similar to Mantachie soils except that they are moderately well drained, and some small areas of more poorly drained soils. These included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is high. The soil has good tilth and can be worked through a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is at a depth of 1 to 1.5 feet during most years from December through March. Frequent, brief flooding occurs during most years from January through March.

This soil has poor potential for cultivated crops. Its potential is limited by the narrow width of areas, by frequent flooding, and by wetness. It has fair potential for hay and pasture. Erosion is not a hazard except where flooding causes scouring.

Potential is good for loblolly pine, sweetgum, yellow-poplar, and several other species. The use of equipment is severely restricted by seasonal wetness and flooding, and the seedling mortality rate is severe.

This soil has poor potential for most urban uses. Frequent flooding and wetness are severe limitations for building site development and sanitary facilities. These limitations are difficult to overcome. Capability subclass Vw; woodland group 1w.

42—Mashulaville fine sandy loam. This deep, poorly drained, nearly level soil is in drainageways and depressions, mostly on old stream terraces of the Coastal Plain. Slopes are 0 to 2 percent and generally are concave. Individual areas are 4 to 80 acres in size.

Typically, the surface layer is dark gray fine sandy loam about 5 inches thick. The subsurface layer, to a depth of 17 inches, is gray fine sandy loam that has yellowish brown mottles. The upper part of the subsoil, to a depth of 74 inches, is light gray and gray loam mottled in shades of brown. It is compact and brittle. The lower part, to a depth of 90 inches or more, is mottled gray and brown loam.

Included with this soil in mapping are small areas of Quitman and Savannah soils. Also included are small areas of a soil that is similar to Mashulaville soils except that it is ponded for most of the year. The included soils make up about 15 to 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and available water capacity is moderate. This soil has a water table near the surface during most years from January through April. Water ponds in many areas during rainy seasons. The root zone is restricted by the seasonal water table and by the compact and brittle subsoil.

This soil has poor potential for cultivated crops. Potential for crops is limited by wetness and ponding. The soil has fair potential for pasture. The potential for crops and pasture can be improved by drainage, but drainage outlets are difficult to find in the nearly level topography.

Potential is good for loblolly pine, water oak, and sweetgum. The use of equipment is severely restricted and the seedling mortality rate is severe because of wetness. Trees should be harvested during summer.

This soil has poor potential for most urban uses because of wetness. Ditching and tile drainage help overcome the limitations caused by wetness, but drainage systems would have to extend a considerable distance from the area to reach a good outlet. Capability subclass IVw; woodland group 3w.

43—Minter loam. This deep, poorly drained, nearly level soil is in low areas of stream terraces of the major rivers and creeks in the county. Slopes range from 0 to 2 percent and are slightly concave. Individual areas are 10 to 200 acres.

Typically, the surface layer is gray loam about 5 inches thick. The upper part of the subsoil, to a depth of 14 inches, is light gray silty clay loam that has yellowish brown mottles; the middle part, to a depth of 44 inches, is light gray clay mottled in shades of brown and red; and the lower part, to a depth of 72 inches or more, is light gray clay loam that has yellowish brown and strong brown mottles.

Included with this soil in mapping are areas of ponded Minter soils. Some areas near the Beloit and Hazen communities are not subject to flooding. Also included are small areas of somewhat poorly drained Gaylesville soils. The included soils make up about 20 percent of this map unit, and individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. Reaction is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is very slow, and available water capacity is high. The soil has fair tilth but can be worked through only a narrow range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is near the surface during most years from December through May. The soil is subject to frequent, brief flooding during winter and spring.

This soil has poor potential for cultivated crops because of flooding and wetness, which delay planting and interfere with harvesting. It has fair to poor potential for hay and pasture because of wetness. Drainage is necessary for most farm uses. Tilth can be improved by returning crop residue to the soil.

Potential is good for various species of oak, for sweetgum, and for some pine trees. Drainage improves the potential for pines. The use of equipment is severely restricted and the seedling mortality rate is severe because of wetness and flooding.

This soil has poor potential for most urban uses because of frequent flooding, very slow permeability, wetness, and low strength. These factors are difficult and expensive to overcome. Capability subclass IVw; woodland group 2w.

44—Minter silt loam, ponded. This deep, poorly drained, nearly level soil is in depressional stream terraces and in sloughs along major rivers and creeks. Areas of this soil are covered with about one-half foot to 3 feet of water for long periods during most years. Slopes are 0 to 2 percent and are concave. Individual areas are 10 to 400 acres.

Typically, the surface layer is dark gray silt loam about 5 inches thick. The upper part of the subsoil, to a depth of 20 inches, is dark gray silty clay that has strong brown mottles, and the lower part, to a depth of 72 inches or more, is gray silty clay.

Included with this soil in mapping are areas of Minter soils that are not ponded or that are ponded only for short periods. Also included are small areas of somewhat poorly drained Gaylesville soils. The included soils make up about 10 percent of this map unit, but included areas generally are less than 3 acres.

This soil is medium in natural fertility and moderate in organic-matter content. Reaction is very strongly acid or strongly acid. Permeability is very slow, and available water capacity is high. The root zone is easily penetrated by plant roots, but the water table restricts root growth.

This soil has poor potential for row crops, hay, and pasture. Its potential is limited by the water which stands on the surface during most years (fig. 7).

Potential is poor for pine trees and good for water-tolerant trees such as baldcypress, water tupelo, and blackgum. Severe equipment limitations, the severe windthrow hazard, and the severe seedling mortality rate are major limitations to woodland use and management.

This soil has poor potential for all urban uses because of ponding, very slow permeability, frequent flooding, and low strength. Measures necessary to overcome these limitations are difficult and expensive to install. This soil has good potential as habitat for wetland wildlife and for associated recreational activities. Capability subclass Vw; woodland group 3w.

45—Oktibbeha clay, 1 to 5 percent slopes. This deep, moderately well drained, gently sloping soil is on uplands in the Blackland Prairie. Slopes are mostly smooth and convex. Individual areas are 4 to 100 acres.

Typically, the surface layer is brown clay about 4 inches thick. The upper part of the subsoil, to a depth of 20 inches, is red clay that has yellowish brown mottles, and the lower part, to a depth of about 43 inches, is mottled red, yellowish brown, and light olive gray clay. The underlying material is marly clay to a depth of 61 inches and partially weathered chalk to a depth of 72 inches or more.

Included with this soil in mapping are areas of Oktibbeha soils that have a thin surface layer of fine sandy loam, loam, or gravelly fine sandy loam. Some small areas are more sloping, are severely eroded, or are shallower to chalk. Also included are small areas of Demopolis, Kipling, and Vaiden soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. It is very strongly acid through slightly acid except for the surface layer in limed areas. Permeability is very slow, and available water capacity is moderate. The soil has poor tilth and can be worked through only a narrow range of moisture content. The root zone is somewhat limited by the depth to marly clay or chalk.

This soil has fair potential for row crops and small grains. It is limited by the poor tilth and the hazard of erosion. It has fair to good potential for hay and pasture. Tilth is improved by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help reduce runoff and control erosion.

This soil has good potential for loblolly pine, shortleaf pine, and eastern redcedar. It has moderate equipment limitations, a moderate seedling mortality rate, and a moderate windthrow hazard because of the clayey texture.

This soil has poor potential for most urban uses. Low strength and high shrink-swell potential are severe limitations for building site development. Special engineering design and installation procedures are needed to overcome these limitations. The very slow permeability is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. Capability subclass IIIe; woodland group 3c.

46—Oktibbeha clay, 5 to 12 percent slopes. This deep, moderately well drained, sloping to strongly sloping soil is on side slopes and ridgetops of Blackland Prairie uplands. Slopes are complex and convex. Individual areas are 5 to 150 acres in size.

Typically, the surface layer is brown clay about 5 inches thick. The subsoil extends to a depth of 43 inches. It is yellowish red, red, and brown clay in the upper part and mottled olive brown, red, and gray clay in the lower part. The underlying material is marly clay to a depth of 61 inches over partially weathered chalk.

Included with this soil in mapping are areas of Oktibbeha soils that have a surface layer of fine sandy loam, loam, or gravelly fine sandy loam. Some areas are more sloping, are severely eroded, or are shallower to chalk. Also included are small areas of Demopolis and Kipling soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic matter content. It is very strongly acid through slightly acid except for the surface layer in limed areas. Permeability is very slow, and available water capacity is moderate. The soil has poor tilth and can be worked through only a narrow range of moisture content. The root zone is somewhat limited by the depth to marly clay or chalk.

This soil has poor potential for row crops and small grains because of slope, poor tilth, and the severe hazard of erosion. It has fair potential for hay and pasture. Tilth is improved by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly pine, shortleaf pine, and eastern redcedar. Limitations are moderate for most woodland uses.

This soil has poor potential for most urban uses. Low strength and high shrink-swell potential are severe limitations for building site development. Slope is an additional severe limitation for small commercial buildings. Special engineering design and installation procedures are needed to overcome these limitations. The very slow permeability is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. Capability subclass VIe; woodland group 3c.

47—Pine Flat sandy loam, 0 to 3 percent slopes. This deep, well drained, nearly level to gently sloping soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth and slightly convex. Individual areas are 30 to 150 acres.

Typically, the surface layer is dark brown sandy loam about 8 inches thick. The upper part of the subsoil is dark reddish brown sandy loam to a depth of 18 inches, the middle part is dark red sandy loam to a depth of 61 inches, and the lower part is red sandy loam to a depth of 96 inches or more.

Included with this soil in mapping are a few small areas of depressional soils that are somewhat poorly drained. Some areas of more sloping Pine Flat soils are included. Also included are small areas of Bama and Lucedale soils. The included soils make up about 10 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. Reaction is very strongly acid through medium acid except for the surface layer in limed areas. Permeability is moderately rapid, and available water capacity is moderate. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

The soil has good potential for row crops and small grains. Cultivated crops suffer from lack of moisture during dry seasons. The soil has good potential for hay and pasture. Good tilth is easily maintained by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly, longleaf, and slash pines. There are no significant limitations to woodland use and management.

This soil has good potential for most urban uses. There are no limitations for building site development. The moderately rapid rate of water movement through this soil restricts its use for sewage lagoons and sanitary landfills because of the hazard of contaminating ground water. Capability subclass IIs; woodland group 2o.

48—Pits. Pits consist of areas from which soil has been removed for use as fill material or that have been mined for sand and gravel. These areas are irregularly shaped and range from 5 to 150 acres. Pits on stream terraces are mostly in areas of sandy soils, and pits on uplands are in areas of loamy soils. The floors and walls of the pits are geologic strata of sand and gravel. They support little or no vegetation, although a few pine trees are growing on the floors of some pits. Most areas would require smoothing, shaping, and filling with heavy machinery for any agricultural or urban use.

Included in mapping are a few large gullies in the northern part of the county. These gullies are 3 to 20 acres in size and make up about 3 percent of this map unit.

Pits are low in natural fertility and organic-matter content. Most areas have moderate to rapid permeability and low available water capacity. Water ponds in some small, low areas within the pits during wet seasons.

Pits have low potential for farm, urban, and woodland uses. The expense of smoothing and shaping along with resulting poor soil discourages reclamation. Not assigned to a capability subclass or a woodland group.

49—Quitman fine sandy loam. This deep, somewhat poorly drained, nearly level soil is on Coastal Plain uplands along drainageways and in depressions. Slopes are 0 to 2 percent and are slightly concave in most areas. Individual areas are 5 to 275 acres.

Typically, the surface layer is dark gray fine sandy loam about 5 inches thick. The subsurface layer, to a depth of 11 inches, is light brownish gray fine sandy loam. The upper part of the subsoil is light yellowish brown fine sandy loam to a depth of 16 inches, the middle part is mottled yellowish brown, light gray, and light yellowish brown loam to a depth of 30 inches, and the lower part is mottled yellowish brown, light gray, and red clay loam to a depth of 72 inches or more.

Included with this soil in mapping are a few small areas of more sloping Quitman soils. Also included are small areas of poorly drained Mashulaville soils and moderately well drained Savannah soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability is moderately slow, and available water capacity is moderate to high. The soil has good tilth and can be worked through a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots. A water table is present most years at a depth of 1.5 to 2 feet from January through March.

This soil has fair potential for cultivated crops. Its potential is limited by wetness, which delays planting and harvesting. It has good potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil.

Potential is good for loblolly and slash pines, water oak, and sweetgum. The soil has moderate equipment limitations and moderate windthrow hazard because of seasonal wetness.

This soil has poor potential for most urban uses because of wetness. Ditching and tile drainage help overcome this limitation, but even after such measures are taken, the soil still has a severe limitation for septic tank absorption fields because of its moderately slowly permeable subsoil. Capability subclass IIw; woodland group 2w.

50—Saffell gravelly fine sandy loam, 4 to 12 percent slopes. This deep, well drained, gently sloping to strongly sloping soil is on narrow ridgetops and side slopes of Coastal Plain uplands. Slopes are complex and convex. Individual areas are 4 to 20 acres in size.

Typically, the surface and subsurface layers are brown gravelly fine sandy loam about 11 inches thick. The upper part of the subsoil is strong brown very gravelly fine sandy loam to a depth of 17 inches, the middle part is yellowish red very gravelly sandy clay loam to a depth of 28 inches, and the lower part is strong brown very gravelly sandy loam to a depth of 37 inches. The underlying material is strong brown and reddish yellow very gravelly loamy sand to a depth of 72 inches or more.

Included with this soil in mapping are small areas of eroded Saffell soils that are marked by a few shallow gullies. Also included are small areas of well drained Bama soils and moderately well drained Savannah soils. These included soils make up about 10 percent of the map unit, but individual areas generally are less than 2 acres.

This soil is low in natural fertility and organic-matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate, and available water capacity is low. The soil has good tilth and can be worked through a wide range of moisture content. The root zone is deep and can be penetrated by plant roots.

This soil has fair to poor potential for row crops and small grains. Its potential is limited because of low available water capacity, slope, and gravel content of the surface layer. Erosion is a hazard where cultivated crops are grown. The gravel interferes with some tillage operations. The soil has fair potential for pasture and hay crops. Minimum tillage, cover crops, terraces, and crop rotations help reduce runoff and control erosion.

Potential is fair for loblolly, longleaf, and shortleaf pines. The seedling mortality rate is moderate because of the droughty nature of the soil.

This soil has fair potential for most urban uses. The gravel interferes with excavations and restricts the use of this soil as topsoil. Slope is a moderate to severe limitation for most building site development and sanitary facilities, but this limitation can be overcome by proper design and installation procedures. Capability subclass IVe; woodland group 4f.

51—Savannah fine sandy loam, 0 to 2 percent slopes. This deep, moderately well drained, nearly level soil is on broad ridgetops of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 5 to 100 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsurface layer is pale brown and yellowish brown fine sandy loam to a depth of 9 inches. The upper part of the subsoil is yellowish brown loam to a depth of 29 inches, and the lower part is compact and brittle, mottled yellowish brown, strong brown, and light gray loam to a depth of 72 inches or more. Red mottles are at a depth of more than 36 inches.

Included with this soil in mapping are areas of more sloping Savannah soils. Also included are small areas of Bama, Benndale, Mashulaville, and Quitman soils. These included soils make up about 15 percent of the map unit, but indivudual areas generally are less than 2 acres.

This soil is low in natural fertility and organic-matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate, and the compact and brittle layer restricts root penetration. A perched water table is at a depth of 2 to 3 feet in most years from January through March.

This soil has good potential for cultivated crops; high yields can be obtained (fig. 8). In some years planting is delayed because of wetness. The soil has good potential for hay and pasture. Yields of small grains are low in some years because of seasonal wetness.

Potential is good for loblolly, longleaf, and slash pines, and sweetgum. The soil has a moderate windthrow hazard because of wetness and the restricted root zone.

Potential is fair for most urban uses. Wetness is a moderate limitation for most building site development. Low strength is a moderate limitation for local roads and streets. The use of septic tank absorption fields is severely restricted because of the moderately slow permeability of the compact and brittle layer. These limitations can be partially overcome by drainage and by proper design and installation procedures. Capability subclass IIw; woodland group 2o.

52—Savannah fine sandy loam, 2 to 5 percent slopes. This deep, moderately well drained, gently sloping soil is on broad ridgetops and upper parts of side slopes of Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 5 to 75 acres in size.

Typically, the surface layer is yellowish brown fine sandy loam about 5 inches thick. The upper part of the subsoil is yellowish brown loam to a depth of 29 inches, and the lower part is compact and brittle, mottled yellowish brown, strong brown, red, and gray loam to a depth of 72 inches or more.

Included with this soil in mapping are areas of soils that are similar to Savannah soils except that they have an eroded surface layer, and some areas of similar soils that have a gravelly subsoil. Also included are areas of Bama, Benndale, Mashulaville, and Quitman soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 2 acres.

This soil is low in natural fertility and organic-matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate, and the compact and brittle layer restricts root penetration. A perched water table is at a

depth of 2 to 3 feet in most years from January through March.

This soil has good potential for cultivated crops. Its potential is limited by the hazard of erosion and by wetness. In some years, planting is delayed by wetness. The soil has good potential for hay and pasture. Yields of small grains are lowered because of wetness during late winter and early spring. Minimum tillage, crop rotations, terraces, and cover crops help reduce runoff and control erosion.

Potential is good for loblolly, longleaf, and slash pines, and sweetgum. The soil has a moderate windthrow hazard because of wetness and the restricted root zone.

Potential is fair for most urban uses. Wetness is a moderate limitation for most building site development. Low strength is a moderate limitation for local roads and streets. The use of septic tank absorption fields is severely restricted because of the moderately slow permeability of the compact and brittle layer. These limitations can be partially overcome by drainage and by proper design and installation procedures. Capability subclass IIe; woodland group 2o.

53—Savannah fine sandy loam, 5 to 8 percent slopes. This deep, moderately well drained, sloping soil is on side slopes of Coastal Plain uplands. Slopes are complex and convex. Individual areas are 4 to 30 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 5 inches thick. The upper part of the subsoil is yellowish brown loam to a depth of 24 inches, and the lower part is compact and brittle, mottled yellowish brown, gray, and red loam to a depth of 72 inches or more.

Included with this soil in mapping are areas of soils that are similar to Savannah soils except that they have an eroded surface layer and some areas of similar soils that have a gravelly subsoil. Some small areas of included soils have a red, clayey subsoil. Also included are small areas of Bama and Benndale soils. The included soils make up about 15 to 20 percent of this map unit, but individual areas are generally less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate, and the compact and brittle layer restricts root penetration. A perched water table is at a depth of 2 to 3 feet in most years from January through March.

This soil has fair potential for cultivated crops, hay, and pasture. Its potential is limited because of slope, seasonal wetness, and the hazard of erosion. Minimum tillage, crop rotation, terraces, and cover crops help reduce runoff and control erosion.

Potential is good for loblolly, longleaf, and slash pines, and sweetgum. The windthrow hazard is moderate because of wetness and the restricted root zone.

This soil has fair potential for most urban uses. Wetness is a moderate limitation for most building site development. Low strength is a moderate limitation for local roads and streets, and slope is an additional limitation for small commercial buildings. The use of septic tank absorption fields is severely restricted by the moderately slow permeability of the compact and brittle layer. These limitations can be partially overcome by drainage and by proper design and installation procedures. Capability subclass IIIe; woodland group 2o.

54—Savannah-Urban land complex, 1 to 8 percent slopes. This map unit consists of deep, moderately well drained, gently sloping to sloping Savannah soils and areas of Urban land. Individual areas of this unit range from 15 to 100 acres in size; they are about 50 to 65 percent Savannah soils and 25 to 40 percent Urban land. Areas of Savannah soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Savannah soils have a surface layer of dark grayish brown fine sandy loam about 6 inches thick. The subsurface layer is pale brown and yellowish brown fine sandy loam to a depth of 9 inches. The upper part of the subsoil is yellowish brown loam to a depth of 29 inches, and the lower part is compact and brittle, mottled yellowish brown, strong brown, and gray loam to a depth of 72 inches or more. Some areas have been cut, built up, or smoothed during construction.

The Urban land part of the unit is covered by sidewalks, streets, parking lots, buildings, runways, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of well drained Bama and Benndale soils and somewhat poorly drained Quitman soils. The included soils make up about 10 percent of the map unit.

Savannah soils are low in natural fertility and organic-matter content. Reaction is strongly acid or very strongly acid except for the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower part. Available water capacity is moderate. A perched water table is at a depth of 2 to 3 feet in most years from January through March.

Savannah soils are used for building sites, lawns, gardens, and parks. They have good potential for most locally adapted grasses, flowers, vegetables, and shrubs. Potential for recreational development is good.

Savannah soils have fair potential for most urban uses. Wetness is a moderate limitation for most building site development. Low strength is a moderate limitation for local roads and streets. The use of septic tank absorption fields is severely restricted because of the mod-

erately slow permeability of the compact and brittle layer. These limitations can be partially overcome by drainage and by proper design and installation procedures. Not assigned to a capability subclass or a woodland group.

55—Sumter silty clay, 1 to 5 percent slopes. This moderately deep, well drained, gently sloping soil is on uplands in the Blackland Prairie. Slopes are smooth and convex. Individual areas are 20 to 200 acres.

Typically, the surface layer is grayish brown silty clay about 6 inches thick. The subsoil, to a depth of 28 inches, is light yellowish brown silty clay mottled in shades of yellow and gray. The underlying material, to a depth of 60 inches or more, is partially weathered chalk.

Included with this soil in mapping are small areas of soils that are similar to Sumter soils except that they are shallower to chalk, and small areas of severely eroded soils. Also included are small areas of Houston, Leeper, Oktibbeha, and Vaiden soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low to moderately low in organic-matter content. Reaction is moderately alkaline, and the soil is calcareous throughout. Permeability is slow, and available water capacity is low. The soil has fair tilth, but the range of moisture content suitable for tillage is narrow. The root zone is moderately deep and easily penetrated by plant roots.

This soil has fair potential for cultivated crops. Potential is limited by the moderate hazard of erosion, the low available water capacity, and poor workability. The soil has fair potential for hay and pasture. Tilth is improved by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help reduce runoff and control erosion.

Potential is fair for eastern redcedar. The moderate erosion hazard, moderate equipment limitations, and the moderate seedling mortality rate are the major limitations to woodland use and management.

Potential is poor for most urban uses because of slow permeability, high shrink-swell potential, low strength, and moderate depth to rock. These limitations are difficult and expensive to overcome. Capability subclass IIIe; woodland group 4c.

56—Sumter silty clay, 5 to 12 percent slopes. This moderately deep, well drained, sloping to strongly sloping soil is on uplands in the Blackland Prairie. Slopes are complex and convex. Individual areas are 20 to 80 acres.

Typically, the surface layer is grayish brown silty clay about 6 inches thick. The subsoil, to a depth of 28 inches, is light yellowish brown and mottled brown, yellow, and gray silty clay. The underlying material, to a depth of 60 inches or more, is partially weathered chalk.

Included with this soil in mapping are small areas of soils that are similar to Sumter soils except that they are shallower to chalk, and small areas of severely eroded soils. Also included are small areas of Demopolis, Leeper, and Oktibbeha soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low to moderately low in organic-matter content. Reaction is moderately alkaline, and the soil is calcareous throughout. Permeability is slow, and available water capacity is low. The soil has fair tilth, but the range of moisture content suitable for tillage is narrow. The root zone is moderately deep and easily penetrated by plant roots.

This soil has poor potential for cultivated crops because of slope, the hazard of erosion, the low available water capacity, and poor workability. It has fair potential for hay and pasture. Erosion is a severe hazard where row crops are grown; minimum tillage and cover crops are needed to reduce runoff and control erosion.

Potential is fair for eastern redcedar. The moderate erosion hazard, moderate equipment limitations, and the moderate seedling mortality rate are the major limitations to woodland use and management.

Potential is poor for most urban uses because of slow permeability, high shrink-swell potential, low strength, slope, and depth to rock. These limitations are difficult to overcome. Capability subclass VIe; woodland group 4c.

57—Sumter-Urban land complex, 1 to 8 percent slopes. This map unit consists of well drained, gently sloping to sloping Sumter soils and areas of Urban land. Individual areas of this unit range from 10 to 100 acres in size; they are 50 to 70 percent Sumter soils and 20 to 40 percent Urban land. Areas of Sumter soils and Urban land are so intricately mixed or so small that it was not practical to separate them in mapping.

Typically, Sumter soils have a surface layer of grayish brown silty clay about 6 inches thick. The subsoil, to a depth of 28 inches, is light yellowish brown silty clay mottled in shades of brown, yellow, and gray. The underlying material, to a depth of about 60 inches, is partially weathered chalk. Some small areas have been cut, built up, or smoothed during construction.

The Urban land part of the unit is covered by sidewalks, streets, parking lots, buildings, and other structures that so obscure the soils that identification is not feasible. These areas have a high rate of runoff because the soils are covered.

Included in mapping are small areas of moderately well drained Houston and Oktibbeha soils and somewhat poorly drained Leeper and Vaiden soils. Included soils make up about 10 percent of the unit.

Sumter soils are medium in natural fertility and low to moderately low in organic-matter content. Reaction is moderately alkaline, and the soil is calcareous throughout. Permeability is slow, and available water capacity is low. The root zone is moderately deep.

Sumter soils are used for building sites, lawns, gardens, and parks. They have fair potential for most locally adapted grasses, flowers, vegetables, and some shrubs. Potential for recreational development is poor because of the clayey texture of the soils.

The Sumter soils have poor potential for most urban uses because of slow permeability, high shrink-swell potential, low strength, and depth to rock. These limitations are difficult and expensive to overcome. Not assigned to a capability subclass or a woodland group.

58—Tadlock fine sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 10 to 120 acres in size.

Typically, the surface layer is dark reddish brown fine sandy loam about 5 inches thick. The subsoil is dark red and red clay to a depth of 72 inches or more.

Included with this soil in mapping are areas of more sloping Tadlock soils. Some of these areas are eroded. A few small areas of a loamy, moderately well drained soil in depressions is also included. Also included are small areas of Brantley and Greenville soils. The included soils make up about 10 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. It is very strongly acid to slightly acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is high. The soil has good tilth and can be worked through a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has good potential for row crops and small grains. Potential is limited by the small size of some areas. The soil has good potential for hay and pasture. Good tilth is best maintained by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has fair potential for most urban uses. Moderate shrink-swell potential and low strength are moderate limitations for most building site development, but these limitations can be overcome by proper engineering design. The moderate permeability of the subsoil is a moderate limitation for septic tank absorption fields. This limitation can be partially overcome by increasing the size of the absorption field. Capability class I; woodland group 3o.

59—Tadlock fine sandy loam, 2 to 5 percent slopes. This deep, well drained, gently sloping soil is on Coastal Plain uplands. Slopes are smooth and convex. Individual areas are 8 to 125 acres in size.

Typically, the surface layer is dark reddish brown fine sandy loam about 5 inches thick. The upper part of the subsoil, to a depth of about 63 inches, is dark red clay loam. The lower part, to a depth of 72 inches or more, is red and yellowish red clay loam that has a few yellowish brown mottles.

Included with this soil in mapping are small areas of more sloping Tadlock soils. Some of these areas have a thinner, eroded surface layer. Small areas of a loamy, moderately well drained soil in depressions are also included. Also included are small areas of Brantley and Greenville soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. It is very strongly acid to medium acid except for the surface layer in limed areas. Permeability is moderate, and available water capacity is high. The soil has good tilth and can be worked through a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has good potential for row crops and small grains. Potential is limited by the small size of some areas and the moderate hazard of erosion. The soil has good potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil. Minimum tillage, cover crops, terraces, contour farming, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has fair potential for most urban uses. Moderate shrink-swell potential and low strength are moderate limitations for most building site development, but these limitations can be overcome by proper engineering design. The moderate permeability of the subsoil is a moderate limitation for septic tank absorption fields. This limitation can be partially overcome by increasing the size of the absorption field. Capability subclass IIe; woodland group 3o.

60—Tadlock fine sandy loam, 5 to 10 percent slopes. This deep, well drained, sloping soil is on Coastal Plain uplands. Slopes are complex and convex. Individual areas are 8 to 50 acres in size.

Typically, the surface layer is dark reddish brown fine sandy loam about 5 inches thick. The upper part of the subsoil is dark red clay to a depth of about 41 inches, and the lower part is dark red and red clay loam to a depth of 72 inches or more.

Included with this soil in mapping are small areas of severely eroded Tadlock soils that are marked by a few gullies in places. Also included are small areas of Brantley and Greenville soils. The included soils make up about 20 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. It is very strongly acid or strongly acid except for the surface layer in limed areas. Permeability

is moderate, and available water capacity is high. The soil has good tilth and can be worked through a moderate range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has fair potential for row crops and small grains. Potential is limited by the moderate to severe hazard of erosion. The soil has good potential for hay and pasture. Good tilth is maintained by returning crop residue to the soil. Minimum tillage, cover crops, terraces, contour farming, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly and slash pines. There are no significant limitations to woodland use and management.

This soil has fair potential for most urban uses. Moderate shrink-swell potential and low strength are moderate limitations for most building site development. Slope is an additional limitation for small commercial buildings. These limitations can be overcome by proper engineering design and installation procedures. The moderate permeability of the subsoil is a moderate limitation for septic tank absorption fields, but this limitation can be partially overcome by increasing the size of the absorption field. Capability subclass IIIe; woodland group 3o.

61—Troup loamy fine sand, 4 to 10 percent slopes. This deep, well drained, gently sloping to sloping soil is on narrow ridgetops and side slopes of Coastal Plain uplands. Slopes are complex and convex. Individual areas are 8 to 40 acres.

Typically, the surface layer is brown loamy fine sand about 7 inches thick. The subsurface layer is yellowish brown, brown, reddish yellow, and pale brown loamy fine sand to a depth of about 61 inches. The upper part of the subsoil is yellowish red sandy loam to a depth of 65 inches, and the lower part is red sandy clay loam to a depth of 96 inches.

Included with this soil in mapping are small areas of more sloping or less sloping Troup soils. Also included are small areas of Bama and Lucy soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid or strongly acid throughout except for the surface layer in limed areas. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. Available water capacity is low. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots.

This soil has poor potential for cultivated crops and small grains because of low available water capacity, steep slopes, and the small size of some of the areas. It has poor to fair potential for hay and pasture. Good tilth is best maintained by returning crop residue to the soil. Minimum tillage, cover crops, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly, longleaf, and slash pines. Because of the sandy texture, the seedling mortality rate is moderate and the use of equipment is moderately restricted.

This soil has good potential for most building site development and for septic tank absorption fields. Cutbanks cave when excavations are made in this sandy soil. Seepage is a severe limitation for sewage lagoon areas and for sanitary landfills. Capability subclass IVs; woodland group 3s.

62—Troup-Kipling association, hilly. This unit consists of well drained and somewhat poorly drained soils in a regular and repeating pattern. These soils are on long, winding side slopes between upland areas and drainageways in the southern half of the county. Slope ranges from 8 to 25 percent. Troup soils are on the upper parts of side slopes, and Kipling soils are on the lower parts. Typically, Kipling soils have slopes of 8 to 12 percent and Troup soils have slopes of 12 to 25 percent. Mapped areas are 30 to 800 acres, and individual areas of each soil range from 4 to 40 acres.

Troup soils and similar soils make up about 45 percent of the unit. Typically, Troup soils have thick, brown loamy fine sand surface and subsurface layers to a depth of about 55 inches. The subsoil is yellowish red sandy loam to a depth of 85 inches or more.

Troup soils are low in natural fertility and organic-matter content. They are very strongly acid or strongly acid throughout. Permeability is rapid in the sandy layers and moderate in the subsoil. Available water capacity is low.

Kipling soils and similar soils make up about 37 percent of the unit. Typically, Kipling soils have a surface layer of dark grayish brown fine sandy loam about 4 inches thick. The subsoil is mottled yellowish brown, gray, and red clay loam to a depth of about 40 inches. The underlying material is mottled brown, red, and gray clay to a depth of about 65 inches. Partially weathered chalk is below a depth of 65 inches.

Kipling soils are medium in natural fertility and low in organic-matter content. They are very strongly acid to medium acid. Permeability is very slow, and available water capacity is high. A seasonal water table is present during most years at a depth of 1.5 to 2 feet from January through March.

The well drained Saffell soils and the moderately well drained Savannah soils on very narrow ridgetops and side slopes and the somewhat poorly drained Mantachie soils along drainageways make up about 18 percent of the map unit.

This unit has poor potential for most agricultural uses. The moderately steep to steep slopes, the moderate to severe hazard of erosion, and the low available water capacity of the Troup soils severely limit use for row crops, hay, and pasture.

Most of the acreage is woodland. Troup soils have good potential for loblolly, longleaf, and slash pines. Kipling soils have good potential for loblolly pine, sweetgum, and some oaks. Moderate equipment limitations and the moderate seedling mortality rate are the major limitations to woodland use and management.

Potential is poor for most urban uses. The Troup soils are mainly limited by their moderately steep to steep slopes and by the hazard of seepage. Kipling soils are limited by their very high shrink-swell potential, low strength, and very slow permeability. Special engineering design and installation procedures are needed to overcome these limitations. Troup soils in capability subclass VIIs; woodland group 3s. Kipling soils in capability subclass VIe; woodland group 2c.

63—Udifluvents, 4 to 25 percent slopes, channeled. This map unit consists of loamy, gently sloping to steep soils on Coastal Plain bottom lands. The soils are on old stream meanders parallel to present stream channels and in slightly rounded positions in the bends of streams. The meanders are dissected with old stream channels that form narrow ridges having short, steep slopes. Some other areas of these soils are on steep streambanks. Most mapped areas are long and fairly narrow and are mostly 10 to 80 acres.

The composition of this map unit is more variable than that of other map units in the survey area. The soils are not uniform and occur without regularity of pattern. The surface layer and underlying layers vary in texture. In most areas the soils on the steep streambanks are more sandy than the soils on the meanders. Mapping has been controlled well enough for the anticipated use of the areas involved.

The soils on the ridges and channels of the meanders are well drained, and the soils on the steep streambanks are mostly somewhat excessively drained. Runoff is rapid. Permeability is moderate to moderately rapid, and available water capacity is moderate to low. The root zone is deep. The hazard of water erosion is severe because of slope. The soils are subject to brief, frequent flooding mostly during winter and spring. These floods deposit layers of new soil material in some areas and scour other areas.

Included with these soils in mapping are small areas of somewhat poorly drained soils and a few small areas of well drained Canton Bend and Wickham soils. The included soils make up less than 15 percent of any one mapped area.

These soils have poor potential for cultivated crops, hay, and pasture. Erosion is a severe hazard because of steep slopes and floodwater scouring. Crops in areas of this map unit would be damaged by scouring or by the deposition of new soil material.

Potential is good for loblolly pine, yellow-poplar, and eastern cottonwood. The use of equipment is moderately restricted by slope. The seedling mortality rate is moderate because of the flooding and subsequent scouring and deposition.

These soils have poor potential for most urban and recreational uses because of the steep slopes and the hazard of flooding. Some areas are satisfactory for paths and trails. These soils have good potential for habitat for woodland wildlife. Capability subclass VIe; woodland group 2s.

64—Urban land. This map unit is made up of extensively built-up areas; 85 to 100 percent of each mapped area is either covered by structures or has been disturbed by cutting and filling.

Most of these areas are nearly level or gently sloping. Storm drain systems usually control runoff on the paved areas, but erosion on many of the exposed cuts or fills is severe.

Included in mapping are small areas of moderately built-up areas where structures cover only 50 to 75 percent of the surface. Also included are remnants of undisturbed soils and areas where the natural soil is covered by fill material. Included areas make up as much as 15 percent of the unit. Not assigned to a capability subclass or a woodland group.

65—Vaiden clay, 0 to 1 percent slopes. This deep, somewhat poorly drained, nearly level soil is on uplands in the Blackland Prairie. Slopes are smooth and slightly convex. Individual areas are 10 to 300 acres in size.

Typically, the surface layer is very dark grayish brown clay about 4 inches thick. The upper part of the subsoil, to a depth of 18 inches, is yellowish brown clay mottled with shades of gray and red. The lower part, to a depth of 26 inches, is mottled yellowish brown, light gray, and red clay. The upper part of the underlying material, to a depth of 62 inches, is gray clay that has light olive brown and yellowish brown mottles. The lower part, to a depth of 80 inches, is mottled light olive brown and light gray clay.

Included in mapping are small areas of more sloping Vaiden soils. Some small areas along creeks are subject to rare flooding, and some small depressional areas are poorly drained. Also included are small areas of Leeper and Kipling soils. The included soils make up about 10 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. It is medium acid to very strongly acid except for the surface layer in limed areas. Permeability is very slow, and available water capacity is moderate. The soil has poor tilth, and the range of moisture content suitable for tillage is narrow. The root zone is deep and can be penetrated by plant roots. A water table is present most years at a depth of 1 to 2 feet from November through March.

This soil has fair potential for row crops. Potential is restricted by wetness and poor workability. Wetness

often delays planting and harvesting. The soil has poor potential for small grains because of seasonal wetness. It has good potential for hay and pasture. Tilth is improved by returning crop residue to the soil.

Potential is fair for loblolly pine and eastern redcedar. The soil has moderate limitations for most woodland use and management concerns because of wetness and the clayey texture of the soil.

Potential is poor for most urban uses because of the very slow permeability, very high shrink-swell potential, low strength, and seasonal wetness of the soil. These limitations are difficult and expensive to overcome. Capability subclass IIIw; woodland group 3c.

66—Vaiden clay, 1 to 5 percent slopes. This deep, somewhat poorly drained, gently sloping soil is on uplands in the Blackland Prairie. Slopes are smooth and convex. Individual areas are 10 to 100 acres.

Typically, the surface layer is grayish brown clay about 4 inches thick. The subsoil extends to a depth of about 28 inches. The upper part is yellowish brown clay that has gray and yellowish red mottles, and the lower part is mottled yellowish brown, yellowish red, and gray clay. The underlying material is mottled gray, yellowish brown, and yellowish red clay to a depth of about 60 inches or more.

Included with this soil in mapping are small areas of eroded Vaiden soils and small areas of soils that are similar to Vaiden soils except that they are poorly drained. Also included are small areas of Kipling and Oktibbeha soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is medium in natural fertility and low in organic-matter content. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is very slow, and available water capacity is moderate. The soil has poor tilth, and the range of moisture content suitable for tillage is narrow. The root zone is deep and can be penetrated by plant roots. A water table is present most years at a depth of 1 to 2 feet from November through March.

This soil has fair potential for row crops. Potential is limited by wetness, poor workability, and the moderate hazard of erosion. The soil has poor potential for small grains because of seasonal wetness. Potential for hay and pasture is good (fig. 9). Tilth is improved by returning crop residue to the soil. Minimum tillage, cover crops, contour farming, and crop rotations help reduce runoff and control erosion.

Potential is fair for loblolly pine and eastern redcedar. The soil has moderate limitations for most woodland use and management concerns because of wetness and the clayey texture of the soil.

Potential is poor for most urban uses because of the very slow permeability, very high shrink-swell potential, low strength, and seasonal wetness of the soil. These limitations are difficult and expensive to overcome. Capability subclass IIIe; woodland group 3c.

67—Wickham fine sandy loam, 0 to 2 percent slopes. This deep, well drained, nearly level soil is on stream terraces of rivers and creeks. Generally the slopes are smooth and slightly convex. Individual areas are 4 to 90 acres.

Typically, the surface layer is brown fine sandy loam about 7 inches thick. The upper part of the subsoil is yellowish red fine sandy loam to a depth of about 12 inches, the middle part is yellowish red loam to a depth of about 35 inches, and the lower part is strong brown sandy loam to a depth of 43 inches. The underlying material is strong brown and brownish yellow loamy fine sand and sand to a depth of 72 inches or more.

Included with this soil in mapping are small areas of soils that are similar to Wickham soils except that they are above the known flood level. Small areas of depressional soils that are somewhat poorly drained to poorly drained are also included. Also included are small areas of Canton Bend and Bigbee soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid to medium acid throughout except for the surface layer in limed areas. Permeability and available water capacity are moderate. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. The soil is subject to rare, brief flooding in some years from December through April during periods of unusually high rainfall.

This soil has good potential for cultivated crops (fig. 10), hay, and pasture. Good tilth is easily maintained by returning crop residue to the soil.

Potential is good for loblolly pine and yellow-poplar. There are no significant limitations to woodland use and management.

This soil has poor potential for most urban uses because of the hazard of flooding. Capability class I; woodland group 2o.

68—Wickham fine sandy loam, 2 to 5 percent slopes. This deep, well drained, gently sloping soil is on terraces of rivers and creeks. Slopes are smooth and convex. Individual areas are 5 to 50 acres.

Typically, the surface layer is brown fine sandy loam about 6 inches thick. The subsoil extends to a depth of 42 inches. It is yellowish red clay loam in the upper part and yellowish red sandy clay loam in the lower part. The underlying material is yellowish red and brown sandy loam and loamy sand to a depth of 72 inches or more.

Included with this soil in mapping are small areas of soils that are similar to Wickham soils except that they are above the known flood level. Small areas of depressional soils that are somewhat poorly drained to poorly

drained are also included. Also included are small areas of Canton Bend and Bigbee soils. The included soils make up about 15 percent of this map unit, but individual areas generally are less than 3 acres.

This soil is low in natural fertility and organic-matter content. It is very strongly acid to medium acid except for the surface layer in limed areas. Permeability and available water capacity are moderate. The soil has good tilth and can be worked throughout a wide range of moisture content. The root zone is deep and easily penetrated by plant roots. The soil is subject to rare, brief flooding in some years from December through April during periods of unusually high rainfall.

This soil has good potential for cultivated crops. Its potential is somewhat limited by the hazard of erosion. It has good potential for hay and pasture. Good tilth is best maintained by returning crop residue to the soil. Minimum tillage, cover crops, terraces, and crop rotations help reduce runoff and control erosion.

Potential is good for loblolly pine and yellow-poplar. There are no significant limitations to woodland use and management.

This soil has poor potential for most urban uses because of the hazard of flooding. Capability subclass IIe; woodland group 2o.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic tank disposal systems, and other factors affecting the productivity, potential, and limitations of the soils under various uses and management. In this way, field experience and measured data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section is useful in planning use and management of soils for crops and pasture and woodland; as sites for buildings, highways and other transportation systems, sanitary facilities, and parks and other recreation facilities; and for wildlife habitat. From the data presented, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

Planners and others using the soil survey can evaluate the impact of specific land uses on the overall productivity of the survey area or other broad planning area and on the environment. Productivity and the environment are closely related to the nature of the soil. Plans should maintain or create a land-use pattern in harmony with the natural soil.

Contractors can find information that is useful in locating sources of sand and gravel, roadfill, and topsoil. Other information indicates the presence of bedrock, wetness, or very firm soil horizons that cause difficulty in excavation.

Health officials, highway officials, engineers, and many other specialists also can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

Lewis D. Williams, conservation agronomist, Soil Conservation Service, helped write this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited to the soil, including some not commonly grown in the survey area, are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the predicted yields of the main crops and hay and pasture plants are presented for each soil.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil maps for detailed planning." Planners of management systems for individual fields or farms should also consider the detailed information given in the description of each soil.

The Alabama Conservation Needs Inventory (*2*) shows that in 1970 there were about 107,400 acres of cropland and 145,200 acres of pastureland in Dallas County. Of the cropland, 62,650 acres were used for row crops, 11,351 acres were used for hayland, 5,886 acres were in close-growing crops, and the remaining 27,513 acres were idle or used for conservation purposes.

The major cultivated crops harvested in 1975 included 36,900 acres of soybeans, 13,000 acres of corn, 17,800 acres of cotton, 4,500 acres of wheat, 1,900 acres of grain sorghum, 100 acres of watermelons, and 100 acres of peanuts.

The potential of the soils in Dallas County for increased production of food and fiber is good. More than 50,000 acres of potential cropland are being used as pasture. Food and fiber production could be increased by better application of the latest farming technology.

The acreage in cultivated crops has increased slightly during the past several years. The acreage in cotton and corn has declined, but the acreage in soybeans has increased rapidly. The acreage in urban land is also increasing. This soil survey can facilitate the making of land use decisions.

Soil erosion is a major concern on about half of the cropland in the county. Erosion is a problem on most cropland soils where the slope is more than 2 percent. Soils such as Bama, Brantley, Canton Bend, Lucedale, and Tadlock are well suited to cultivated crops and need erosion control practices. Erosion and wetness both are concerns on Savannah soils. Lucy soils have a thick, loamy fine sand surface layer and are easily eroded by water. Clayey soils such as Houston, Oktibbeha, Sumter, and Vaiden are easily eroded and have poor tilth. In addition, Houston and Vaiden soils are limited by wetness during the more rainy seasons.

Loss of soil through erosion is damaging in several ways. Productivity is reduced as the surface layer is lost and the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil and on soils, such as Demopolis, Savannah, and Sumter soils, that are underlain by materials or layers that restrict rooting depth. Loss of the surface layer by erosion also results in the loss of soil fertility by the direct removal of plant nutrients and organic matter. Soil erosion results in sedimentation, which causes offsite damage. Control of erosion minimizes pollution of streams by sediment and by the nutrients and pesticides that are carried by sediment.

Erosion control practices provide protective cover, reduce runoff, and increase infiltration. A cropping system that keeps vegetative cover on the soil for extended periods can hold soil erosion losses to amounts that will not reduce the productive capacity of the soil. A cropping system that contains perennial grasses and legumes is very effective in controlling erosion. It also provides nitrogen, increases the rooting depth, and improves tilth for the crops that follow in rotation.

Keeping tillage to a minimum and leaving crop residues on the surface help increase infiltration and reduce the hazards of runoff and erosion. These practices can be adapted to most soils in the county. No-till farming is an effective erosion control practice on sloping cropland. It can be used in fields where topographic conditions are unfavorable for terracing and contour farming. Terraces and diversions reduce the length of slope and help control runoff and erosion. They are most practical on deep, well drained, sloping soils such as Bama, Brantley, Lucedale, and Tadlock. Soils that have complex slopes, a very clayey subsoil, or restrictive layers are less well suited to terraces. Diversions are very effective in intercepting runoff and reducing erosion when they are built on toe slopes and benches below hilly land. Contour farming is a very effective erosion control practice. Its use has become somewhat limited to soils having smooth, uniform slopes because of the increased use of large tillage equipment.

Assistance on the planning and design of erosion control practices for each kind of soil is available in the local office of the Soil Conservation Service.

Soil drainage is needed on some cropland and pastureland in the county. Many soils are too wet in their natural state for production of crops and pasture plants. On other soils, drainage increases yields and facilitates management. In many areas, soils cannot be drained because of inadequate outlets.

The most common type of drainage system is surface ditches. Underground tile systems, however, are being used more than in the past because they do not interfere with tillage. Drainage systems should be planned and designed by technicians who know soils well and who are thoroughly trained in drainage survey and design.

Soil fertility is naturally low in most of the soils in the county. Soils on flood plains are higher in natural fertility than the soils on uplands. Demopolis, Houston, Leeper, and Sumter soils generally are alkaline; the other soils in the county are naturally acid. The acid soils require applications of agricultural limestone to raise and maintain the pH level sufficiently for optimum utilization of commercial fertilizer by plants. Crops on all soils respond well to applications of fertilizer. Soils vary in their natural level of phosphorus and potassium; therefore, all additions of lime and fertilizer should be based on a current soil test. Leaching is a concern on very sandy soils, such as Bigbee and Lucy. The Cooperative Extension Service can help in determining the kinds and amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil. Soils that have good tilth are granular and porous.

Many of the soils used for crops in the county have a loamy surface layer that is low in content of organic matter. The structure of these soils is weak, and intense rainstorms often cause the formation of a weak crust on the surface. The crust is hard when dry and somewhat impervious to water. It reduces infiltration of water and increases runoff. Regular additions of crop residues, green manure crops, barnyard manure, and other organic material can help improve soil structure and reduce crusting.

Field crops suited to the soils and climate of the survey area include many that are not now commonly grown. Soybeans, cotton, corn, wheat, and grain sorghum are the main crops now grown. Peanuts, potatoes, and many vegetables, however, could be produced on many of the soils in the county.

Wheat and rye are the most important small grain crops, and oats and barley are well suited. Crimson clover, yuchi clover, ball clover, vetch, and caley peas are grown for seed production, winter grazing, and winter cover crops. One or more annual legumes are usually planted with small grain and ryegrass in plantings for winter grazing and cover crops.

Pasture and hay crops are important in the survey area. Dallisgrass, tall fescue, bahiagrass, johnsongrass, common bermudagrass, and hybrid bermudagrasses are the main perennial grasses used for pasture and hay. White clover or one of the annual legumes is usually planted with perennial grasses, especially if the grasses are to be used for pasture. Sericea and annual lespedezas are well suited to many of the soils.

Several pasture and hayland management practices are needed on all soils on which hay and pasture crops are grown. They include proper grazing and cutting heights, weed control, proper fertilization, rotational grazing, and scattering of animal droppings. Cool-season perennial grasses such as tall fescue should be rested in the summer so that food reserves will be stored in the plants for fall and early spring growth. Overgrazing and low fertilization are two important problems associated with pasture production. Both problems result in weak plants and poor stands that are easily infested with weeds.

Yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes suited to the climate and the soil. A few farmers may be obtaining average yields higher than those shown in table 6.

The management needed to achieve the indicated yields of the various crops depends on the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residues, barnyard manure, and green-manure crops; harvesting crops with the smallest possible loss; and timeliness of all fieldwork.

Capability classes and subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forest trees, or for engineering purposes.

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. Only the levels class and subclass are used in this soil survey. These levels are defined in the following paragraphs. A survey area may not have soils of all classes.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or

cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability subclass is identified in the description of each soil mapping unit in the section "Soil maps for detailed planning."

Woodland management and productivity

Jerry L. Johnson, forester, Soil Conservation Service, helped write this section.

Dallas County has 313,500 acres of commercial forest land. This comprises about 50 percent of the total land area of the county. The acreage of forest land in Dallas County decreased by 7 percent from 1963 to 1972. Private landowners own approximately 78 percent of the commercial forest land; industry owns 19 percent; the Talladega National Forest contains 2 percent; and the remaining 1 percent is public commercial forest land (*7*).

Forest types in Dallas County are: 5,500 acres of longleaf-slash pine; 99,000 acres of loblolly-shortleaf pine; 71,500 acres of oak-pine; 93,500 acres of oak-hickory; 38,500 acres of oak-gum-cypress; and 5,500 acres of elm-ash-cottonwood (*7*). Many acres of upland hardwoods could be converted to pines. Pines generally grow better than hardwoods on upland sites. Hardwoods usually grow well on lowland sites, on slopes with northerly aspects, and in coves.

Good stands of merchantable timber grow throughout the county. Most of the soils in Dallas County have good potential productivity (*9*). More than 50,000 acres of soils are suited to hardwoods and eastern redcedar. The forests in Dallas County are composed of 99,000 acres of sawtimber, 93,500 acres of poletimber, and 121,000 acres of seedlings and saplings (*7*).

There are eight primary wood-using plants in Dallas County employing more than 600 people (*3*). The value of the local forest products industry, however, is below its potential.

Table 7 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the ordination (woodland group) symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates insignificant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the following order: x, w, t, d, c, s, f, and r.

In table 7 the soils are also rated for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of major soil limitations.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if some measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings. Plant competition is not considered in the ratings. Seedlings from good planting stock that are properly planted during a period of sufficient rainfall are rated. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Considered in the ratings of *windthrow hazard* are characteristics of the soil that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that trees in wooded areas are not expected to be blown down by commonly occurring winds; *moderate*, that some trees are blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-

aged, unmanaged stands. Common trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Engineering

This section provides information about the use of soils for building sites, sanitary facilities, construction material, and water management. Among those who can benefit from this information are engineers, landowners, community planners, town and city managers, land developers, builders, contractors, and farmers and ranchers.

The ratings in the engineering tables are based on test data and estimated data in the "Soil properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

Among the soil properties and site conditions identified by a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

On the basis of information assembled about soil properties, ranges of values can be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values can be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to (1) select potential residential, commercial, industrial, and recreational uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 8 shows, for each kind of soil, the degree and kind of limitations for building site development; table 9, for sanitary facilities; and table 11, for water management. Table 10 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

Some of the terms used in this soil survey have a special meaning in soil science. Many of these terms are defined in the Glossary.

Building site development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 8. A *slight* limitation indicates that soil properties generally are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates that one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are made for pipelines, sewerlines, communications and power transmission lines, basements, open ditches, and cemeteries. Such digging or trenching is influenced by soil wetness caused by a seasonal high water table; the texture and consistence of soils; the tendency of soils to cave in or slough; and

the presence of very firm, dense soil layers, bedrock, or large stones. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is given, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and *small commercial buildings* referred to in table 8 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be sufficiently stable that cracking or subsidence of the structure from settling or shear failure of the foundation does not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, potential frost action, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious hazard.

Local roads and streets referred to in table 8 have an all-weather surface that can carry light to medium traffic all year. They consist of a subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, slope, depth to hard rock or very compact layers, and content of large stones affect stability and ease of excavation.

Sanitary facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 9 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required. Soil suitability is rated by the terms *good*, *fair*, or *poor*, which, respectively, mean about the same as the terms *slight*, *moderate*, and *severe*.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of 18 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, boulders, and shallowness to bedrock interfere with installation. Excessive slope can cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel or fractured bedrock is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table can be installed or the size of the absorption field can be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are very high in content of organic matter and those that have cobbles, stones, or boulders are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce the lagoon's capacity for liquid waste. Slope,

depth to bedrock, and susceptibility to flooding also affect the suitability of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soil material affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste by placing refuse in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil material. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness can be a limitation, because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

Ease of excavation affects the suitability of a soil for the trench type of landfill. A suitable soil is deep to bedrock and free of large stones and boulders. If the seasonal water table is high, water will seep into trenches.

Unless otherwise stated, the limitations in table 9 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation of slight or moderate may not be valid. Site investigation is needed before a site is selected.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 10 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within their profile. The estimated engineering properties in table 14 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as moderate shrink-swell potential, moderately steep slopes, wetness, or many stones. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 10 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 14.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slope, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are free of stones and cobbles, are low in content of gravel, and have gentle slopes. They are low in soluble salts that can limit or prevent plant growth. They are naturally fertile or respond well to fertilizer. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy soils or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, or soluble salt; steep soils; and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is generally preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 11 site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and has favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Large stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

Aquifer-fed excavated ponds are bodies of water made by excavating a pit or dugout into a ground-water aquifer. Excluded are ponds that are fed by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Ratings in table 11 are for ponds that are properly designed, located, and constructed. Soil properties and site features that affect aquifer-fed ponds are depth to a permanent water table, permeability of the aquifer, quality of the water, and ease of excavation.

Drainage of soil is affected by such soil properties as permeability; texture; depth to bedrock, hardpan, or other layers that affect the rate of water movement; depth to the water table; slope; stability of ditchbanks; susceptibility to flooding; salinity and alkalinity; and availability of outlets for drainage.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to intercept runoff. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for recreation uses. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 12 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 9, and interpretations for dwellings without

basements and for local roads and streets, given in table 8.

Camp areas require such site preparation as shaping and leveling for tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones or boulders, is firm after rains, and is not dusty when dry. If shaping is required to obtain a uniform grade, the depth of the soil over bedrock or hardpan should be enough to allow necessary grading.

Paths and trails for walking, horseback riding, bicycling, and other uses should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Wildlife habitat

Robert E. Waters, biologist, Soil Conservation Service, helped prepare this section.

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the construction of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, is inadequate, or is inaccessible, wildlife either are scarce or do not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by helping the natural establishment of desirable plants.

In table 13, the soils in Dallas County are rated according to their potential to produce the elements of wildlife habitat and as habitat for the general kinds of wildlife in the county. The information in table 13 can be used in planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the habitat for the kind of wildlife is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or the habitat for the kind of wildlife can be created, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or the habitat for the kind of wildlife. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

The elements of wildlife habitat are briefly described in the following paragraphs.

Grain and seed crops are seed-producing annuals used by wildlife. Major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, soybeans, wheat, sorghums, oats, barley, millets, cowpeas, and sunflower.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are tall fescue, bahiagrass, bermudagrass, dallisgrass, johnsongrass, lovegrass, lespedezas, clovers, and vetches.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds, that provide food and cover for wildlife. Major soil properties that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are dewberry, black-

berry, crotons, pokeweed, patridgepeas, crabgrass, and paspalums.

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Major soil properties that affect growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness. Examples of hardwood trees are oak, yellow-poplar, sweetgum, dogwood, hickories, beech, and hackberry.

Coniferous plants are cone-bearing trees, shrubs, or ground cover plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on the growth of coniferous plants are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pines, cypress, and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged and floating aquatics. They produce food or cover for wildlife. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, rushes, sedges, reeds, and cattails.

Shallow water areas are bodies of water that have an average depth of less than 5 feet and that are useful to wildlife. They can be naturally wet areas, or they can be created by dams, levees, or water-control structures in marshes or streams. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The kinds of wildlife habitat are briefly described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. Examples of wildlife attracted to this habitat are bobwhite quail, mourning dove, cottontail rabbit, and red fox.

Habitat for woodland wildlife consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants. The kinds of wildlife attracted to this habitat include wild turkey, deer, squirrels, woodcock, gray fox, raccoon, thrushes, vireos, and woodpeckers.

Habitat for wetland wildlife consists of open, marshy or swampy, shallow water areas where water-tolerant plants grow. Examples of wildlife attracted to this habitat are ducks, geese, herons, shore birds, rails, kingfishers, muskrat, mink, beaver, otter, and turtles.

Soil properties

Extensive data about soil properties are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classifications, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present data about pertinent soil and water features, engineering test data, and data obtained from physical and chemical laboratory analyses of soils.

Engineering properties

Table 14 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 14 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 14 in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added,

for example, "gravelly loam." Other texture terms are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*5*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*4*).

The *Unified* system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The *AASHTO* system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified in group A-8 on the basis of visual inspection.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested in the survey area, with group index numbers in parentheses, is given in table 19. The estimated classification, without group index numbers, is given in table 14. Also in table 14 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and *plasticity index* indicate the effect of water on the strength and consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index are estimated on the basis of test data from the survey area or from nearby areas and on observations of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted.

Physical and chemical properties

Table 15 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the typical pedon of each soil. The estimates are based on field observations and on test data for these and similar soils.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil. The estimates are for vertical water movement when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in planning and designing drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as a range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A high shrink-swell potential indi-

cates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Erosion factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment. The soil erodibility factor (K) is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values range from 0.10 to 0.64. To estimate annual soil loss per acre, the K value of a soil is modified by factors representing plant cover, grade and length of slope, management practices, and climate. The soil-loss tolerance factor (T) is the maximum rate of soil erosion, whether from rainfall or soil blowing, that can occur without reducing crop production or environmental quality. The rate is expressed in tons of soil loss per acre per year.

Soil and water features

Table 16 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils that have a layer that impedes the downward movement of water or soils that have moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clay soils that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding is the temporary covering of soil with water from overflowing streams, with runoff from adjacent slopes, and by tides. Water standing for short periods after rains or after snow melts is not considered flooding, nor is water in swamps and marshes. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; and absence of distinctive soil horizons that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding; and on information that relates the position of each soil on the landscape to historic floods.

The generalized description of flood hazards is of value in land-use planning and provides a valid basis for land-use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table is the highest level of a saturated zone more than 6 inches thick for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed in many borings made during the course of the soil survey. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the mapping of the soils. The kind of bedrock and its hardness as related to ease of excavation is also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Risk of corrosion pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rate of corrosion of concrete is based mainly on

the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Physical and chemical analyses of selected soils

The results of physical analysis of several typical pedons of the survey area are given in table 17. The results of chemical analyses of these soils are given in table 18. The data presented are for samples from soil series that are important in the survey area. All samples were collected from carefully selected sites that are typical of the series and discussed in the section "Soil series and morphology." The soil samples were analyzed by the Agronomy and Soils Mineralogy Laboratory, Auburn University.

Most determinations, except those for grain-size analysis and bulk density, were made on soil material smaller than 2 millimeters in diameter. All capacity measurements are reported on an oven-dry basis. The methods that were used in obtaining the data are indicated in the list that follows. The codes, in parentheses, refer to published methods codes.

Sand—(0.05-2.0 mm fraction) weight percentages of materials less than 2 mm (3A1).
Silt—(0.002-0.05 mm fraction) pipette extraction, weight percentages of all materials less than 2 mm (3A1).
Clay—(fraction less than 0.002 mm) pipette extraction, weight percentages of materials less than 2 mm (3A1).
Extractable bases—and **base saturation** were determined after the method of Hajek, Adams, and Cope (*6*).
Reaction (pH)—1:1 water dilution (8C1a).

Engineering test data

The results of analyses of engineering properties of several typical soils of the survey area are given in table 19.

The data presented are for soil samples that were collected from carefully selected sites. The soil profiles sampled are typical of the series discussed in the section "Soil series and morphology." The soil samples were analyzed by the State of Alabama, Highway Department Soils Laboratory.

The methods used in obtaining the data are listed by code in the next paragraph. Most of the codes, in parentheses, refer to the methods assigned by the American Association of State Highway and Transportation Officials. The code for Unified classification was assigned by the American Society for Testing and Materials.

The methods and codes are AASHTO classification (M-145-66); Unified classification (D-2487-66T); mechanical analysis (T88-57); liquid limit (T89-60); plasticity index (T90-56); moisture-density, method A (T99-57).

Soil series and morphology

In this section, each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual (*8*). Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or map units, of each soil series are described in the section "Soil maps for detailed planning."

Angie series

The Angie series consists of deep, moderately well drained, slowly permeable soils in the Coastal Plain. These soils formed in deposits of clayey sediments on stream and marine terraces. Slope ranges from 0 to 12 percent.

Angie soils are on the same landscape as Kipling, Mashulaville, and Savannah soils. Kipling soils have montmorillonitic mineralogy and very high shrink-swell potential in the subsoil. Mashulaville soils are poorly drained, have a coarse-loamy control section, and are below the Angie soils on the landscape. Savannah soils have a fine-loamy control section and a fragipan.

Typical pedon of Angie fine sandy loam, 0 to 2 percent slopes, in a cultivated field about 3.3 miles north of Orrville, 80 feet west and 100 feet north of the southeast corner, NE1/4 sec. 15, T. 16 N., R. 8 E.:

Ap—0 to 7 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; strongly acid; abrupt smooth boundary.
B21t—7 to 18 inches; yellowish brown (10YR 5/8) clay loam; moderate fine subangular blocky structure; firm; thin patchy clay films on faces of peds; strongly acid; clear wavy boundary.
B22t—18 to 24 inches; yellowish brown (10YR 5/8) clay loam; common medium distinct yellowish red (5YR 5/6) and pale yellow (2.5Y 7/4) mottles; moderate fine subangular blocky structure; firm; thin patchy

clay films on faces of peds; strongly acid; clear wavy boundary.

B23t—24 to 72 inches; yellowish brown (10YR 5/8) clay; common medium distinct light gray (5Y 7/1) and red (2.5YR 4/6) mottles; moderate fine subangular blocky structure; firm; thin patchy clay films on faces of peds; mottles increase in percentage below a depth of 50 inches; strongly acid.

Solum thickness ranges from 60 to more than 72 inches. Reaction is strongly acid or very strongly acid throughout except in limed areas. A few small rounded quartz pebbles are in some pedons.

The A horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 2 through 4.

The upper part of the Bt horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8. Depth to mottles in shades of gray, brown, yellow, or red ranges from 9 to 28 inches. The lower part of the Bt horizon has colors like those in the upper part, or it is mottled in shades of brown, gray, yellow, or red. Texture is clay loam or clay. The control section averages between 35 and 45 percent clay.

Bama series

The Bama series consists of deep, well drained, moderately permeable soils in the Coastal Plain. These soils formed in loamy sediments on narrow to broad upland ridgetops and upper parts of side slopes. Slope ranges from 0 to 12 percent.

The Bama soils are on the same landscape as Lucedale, Lucy, Pine Flat, Saffell, Savannah, and Troup soils. Lucedale and Pine Flat soils have a dark red B2t horizon. In addition, Pine Flat soils have a coarse-loamy control section. Lucy and Troup soils have a thick, sandy surface layer. Saffell soils have a thinner solum and a loamy-skeletal control section. Savannah soils generally are on slightly lower positions in the landscape and have a fragipan.

Typical pedon of Bama fine sandy loam, 0 to 2 percent slopes, in a field about 1.0 mile northeast of Carlowville School, 1,200 feet north and 250 feet east of the southwest corner, NE1/4 sec. 13, T. 13 N., R. 10 E.:

Ap—0 to 6 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; medium acid; clear smooth boundary.

B1—6 to 11 inches; yellowish red (5YR 4/6) loam; weak fine subangular blocky structure; friable; common fine roots; sand grains bridged and coated with clay; few pockets of brown fine sandy loam; strongly acid; gradual wavy boundary.

B21t—11 to 44 inches; red (2.5YR 4/6) clay loam; weak fine subangular blocky structure; friable; few fine roots; thin patchy clay films on faces of peds; few clean sand grains; strongly acid; gradual wavy boundary.

B22t—44 to 78 inches; red (2.5YR 4/8) sandy clay loam; weak fine subangular blocky structure; friable; thin patchy clay films on faces of peds; few clean sand grains; strongly acid.

Solum thickness ranges from 60 to more than 78 inches. Reaction is strongly acid or very strongly acid except where limed. Content of iron concretions and quartz pebbles ranges from 0 to 10 percent throughout the profile.

The A1 or Ap horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 2 through 4.

The A2 horizon, where present, has hue of 10YR, value of 5, and chroma of 4. Texture is fine sandy loam.

The B1 horizon, where present, has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. Texture is fine sandy loam, loam, or sandy clay loam.

The B2t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. In some pedons the lower part of the B2t horizon has mottles in shades of brown or yellow, or it does not have a matrix color but is mottled in shades of brown, red, or yellow. Texture is loam, sandy clay loam, or clay loam. The control section averages between 25 and 32 percent clay.

Benndale series

The Benndale series consists of deep, well drained, moderately permeable soils in the Coastal Plain. These soils formed in loamy sediments on uplands. Slope ranges from 0 to 3 percent.

Benndale soils are on the same landscape as Mashulaville, Pine Flat, and Savannah soils. Pine Flat soils are in slightly higher positions in the landscape and have a dark red B2t horizon. Mashulaville soils are along drainageways and depressions, are poorly drained, and have a fragipan. Savannah soils are moderately well drained and have a fragipan.

Typical pedon of Benndale fine sandy loam, 0 to 3 percent slopes, in a field about 3.5 miles east of Five Points, 1,100 feet south and 200 feet west of the northeast corner, NW1/4 sec. 28, T. 15 N., R. 9 E.:

Ap—0 to 6 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; few fine roots; strongly acid; abrupt smooth boundary.

B1—6 to 11 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine subangular blocky structure; very friable; few fine roots; sand grains bridged with clay; strongly acid; clear smooth boundary.

B21t—11 to 37 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; few small soft yellowish red (5YR 4/6) nodules; strongly acid; clear wavy boundary.

B22t—37 to 58 inches; yellowish brown (10YR 5/6) fine sandy loam; common pockets of light yellowish brown (10YR 6/4) fine sandy loam; weak fine subangular blocky structure; very friable; sand grains bridged with clay; strongly acid; gradual wavy boundary.

B23t—58 to 78 inches; yellowish brown (10YR 5/6) sandy clay loam; few medium distinct strong brown (7.5YR 5/6) and light gray (10YR 7/2) mottles; weak fine subangular blocky structure; friable; sand grains bridged and coated with clay; strongly acid.

Solum thickness ranges from 60 to more than 78 inches. Reaction is strongly acid or very strongly acid except where limed.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 3.

The B1 horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 4 or 6. It has small pockets of clean sand in some pedons.

The B2t horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 or 8. The lower part of the B2t horizon is mottled in shades of brown, red, or gray in some pedons. A few firm, red nodules are in the lower part of the B2t horizon in some pedons. Texture is fine sandy loam or sandy clay loam. The control section averages between 10 and 18 percent clay.

Bigbee series

The Bigbee series consists of deep, excessively drained, rapidly permeable soils on terraces of major streams. These soils formed in thick, sandy alluvial sediments. Slope ranges from 0 to 5 percent.

Bigbee soils are on the same landscape as Canton Bend, Gaylesville, and Wickham soils, all of which are in lower positions in the landscape. Canton Bend and Gaylesville soils have a clayey Bt horizon. Also, Gaylesville soils have mottles with chroma of 2 or less in the upper part of the subsoil. Wickham soils have a fine-loamy control section.

Typical pedon of Bigbee sand, 0 to 5 percent slopes, 800 feet south and 750 feet west of the northeast corner, SE1/4 sec. 5, T. 16 N., R. 11 E.:

Ap—0 to 8 inches; brown (10YR 4/3) sand; weak fine granular structure; very friable; common fine roots; few fine flakes of mica; medium acid; clear wavy boundary.

C1—8 to 36 inches; strong brown (7.5YR 5/6) sand; single grained; loose; few fine roots; few fine flakes of mica; strongly acid; gradual wavy boundary.

C2—36 to 52 inches; strong brown (7.5YR 5/6) sand; common coarse distinct pale brown (10YR 6/3) mottles; single grained; loose; few fine roots; few fine flakes of mica; strongly acid; gradual wavy boundary.

C3—52 to 70 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few fine roots; few fine flakes of mica; strongly acid; gradual wavy boundary.

C4—70 to 90 inches; very pale brown (10YR 7/4) sand; many medium faint pale brown (10YR 6/3) mottles; single grained; loose; few fine roots; few fine flakes of mica; strongly acid.

Reaction ranges from medium acid to very strongly acid. Few to common fine flakes of mica are throughout most pedons. The control section averages between 6 and 12 percent silt plus clay.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3.

The C horizon has hue of 7.5YR or 10YR, value of 5 through 7, and chroma of 4 through 8. It has pale brown mottles at a depth of more than 36 inches. Texture is sand or loamy sand.

Bonneau series

The Bonneau series consists of deep, moderately well drained, moderately permeable soils on stream terraces. These soils formed in loamy alluvial sediments. Slope ranges from 0 to 5 percent.

Bonneau soils are on the same landscape as Canton Bend, Gaylesville, and Wickham soils, all of which are in lower positions in the landscape. Canton Bend and Wickham soils have a loamy surface layer less than 20 inches thick. In addition, Canton Bend soils have a clayey control section. Gaylesville soils are somewhat poorly drained and have a clayey control section.

Typical pedon of Bonneau loamy fine sand, 0 to 5 percent slopes, in a pecan orchard, about 1.75 miles west of Valley Creek in Selma and 200 yards southeast of Alabama Highway 22, 1,200 feet south and 500 feet west of the northeast corner, NE1/4 sec. 3, T. 16 N., R. 10 E.:

Ap—0 to 6 inches; brown (10YR 4/3) loamy fine sand; weak fine granular structure; very friable; few fine roots; slightly acid; abrupt smooth boundary.

A21—6 to 16 inches; light yellowish brown (2.5Y 6/4) loamy fine sand; weak fine granular structure; very friable; few fine roots; slightly acid; clear wavy boundary.

A22—16 to 26 inches; pale yellow (5Y 7/3) loamy fine sand; weak fine granular structure; very friable; few fine roots; medium acid; clear wavy boundary.

B21t—26 to 31 inches; light yellowish brown (2.5Y 6/4) sandy clay loam; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; strongly acid; clear wavy boundary.

B22t—31 to 46 inches; mottled yellowish brown (10YR 5/6), strong brown (7.5YR 5/6), red (2.5YR 4/6), and light brownish gray (2.5Y 6/2) sandy clay loam; moderate medium subangular blocky structure; firm;

thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B23t—46 to 65 inches; mottled yellowish brown (10YR 5/8), light brownish gray (2.5Y 6/2), and strong brown (7.5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; firm; thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B24t—65 to 75 inches; mottled yellowish brown (10YR 5/8), light brownish gray (2.5Y 6/2), and strong brown (7.5YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; very strongly acid.

Solum thickness ranges from 60 to 75 inches or more. Reaction is strongly acid or very strongly acid except in limed areas.

The Ap horizon has hue of 10YR, value of 4, and chroma of 2 or 3.

The A2 horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 through 7, and chroma of 3 or 4.

The upper part of B2t horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma or 4 through 8. Some pedons have few to common mottles in shades of brown. The lower part of the B2t horizon has the same color range as the upper part and is mottled in shades of brown, yellow, red, and gray, or it does not have a matrix color but is mottled brown, yellow, red, and gray. Texture is sandy clay loam or sandy loam. The control section averages between 20 and 30 percent clay.

Brantley series

The Brantley series consists of deep, well drained, slowly permeable soils on uplands in the Coastal Plain. These soils formed in clayey sediments in a discontinuous belt mainly north of the Blackland Prairie. Slope ranges from 0 to 20 percent.

Brantley soils are on the same landscape as Lucy, Mantachie, and Tadlock soils. Lucy soils are on narrow ridgetops and side slopes; they have a thick, sandy surface layer and a loamy control section. Mantachie soils are along drainageways; they are somewhat poorly drained and do not have an argillic horizon. Tadlock soils are in similar positions as Brantley soils; they have a thicker, dark red subsoil.

Typical pedon of Brantley fine sandy loam, 2 to 5 percent slopes, in a cultivated field, 1,050 feet south and 150 feet west of the northeast corner, SW1/4 sec. 5, T. 17 N., R. 10 E.:

Ap—0 to 6 inches; brown (10YR 4/3) fine sandy loam; weak fine and medium granular structure; very friable; few fine roots; slightly acid; abrupt smooth boundary.

B21t—6 to 20 inches; dark brown (7.5YR 4/4) clay; strong medium subangular blocky structure; firm; few fine roots and pores; thin continuous clay films on faces of most peds; few soft black nodules and stains mostly in the lower half of the horizon; medium acid; gradual wavy boundary.

B22t—20 to 35 inches; dark brown (7.5YR 4/4) clay loam; strong medium subangular blocky structure; firm; thin continuous clay films on faces of most peds; few soft and hard black nodules and stains; interiors of many peds are strong brown (7.5YR 5/6); strongly acid; gradual wavy boundary.

B3—35 to 52 inches; dark brown (7.5YR 4/4) clay loam; ped interiors are mottled yellowish brown (10YR 5/6) and pale olive (5Y 6/3); strong coarse subangular blocky structure; friable; thin continuous clay films on faces of most peds; few soft and hard black nodules and stains; a few soft white sandstone pebbles less than 1/2 inch in diameter; ped interiors have a sandy clay loam texture; strongly acid; gradual wavy boundary.

C—52 to 72 inches; mottled dark brown (7.5YR 4/4), yellowish brown (10YR 5/8), and light gray (5Y 7/2) fine sandy loam; few pockets of sandy clay loam; massive; friable; very strongly acid.

Solum thickness ranges from 40 to 60 inches. Reaction is strongly acid or very strongly acid except in limed areas. A few medium and fine, soft to hard black nodules and stains are throughout the B horizon in most pedons. Few fine flakes of mica are in the B3 and C horizons of many pedons.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 through 4.

The B1 horizon, where present, has hue of 7.5YR, value of 4 or 5, and chroma of 4 through 6. Texture is clay loam.

The B2t horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 4 through 8. In some pedons, the lower part of the B2t horizon is mottled in shades of yellow, brown, or red. Texture is clay loam or clay. The control section averages between 35 and 45 percent clay.

The B3 horizon has the same matrix colors as the B2t horizon. In most pedons it is mottled in shades of yellow, brown, olive, or red; in some pedons it is mottled with gray. It is sandy clay loam or clay loam. Pebbles of sandstone make up from 0 to 10 percent of the horizon.

The C horizon has hue of 10YR or 7.5YR, value of 4 through 6, and chroma of 4 through 8, and it is mottled in shades of yellow, brown, red, or gray. Many pedons do not have a matrix color but are mottled in various shades of yellow, brown, red, or gray. Texture is typically fine sandy loam but includes loamy fine sand, loamy sand, sandy loam, or sandy clay loam.

Canton Bend series

The Canton Bend series consists of deep, well drained, slowly permeable soils on stream terraces. These soils formed in loamy and clayey sediments along the major creeks and rivers. Slope ranges from 0 to 5 percent.

The Canton Bend soils are on the same landscape as Bigbee, Bonneau, Gaylesville, Minter, and Wickham soils and are adjacent to Congaree soils. Bigbee and Bonneau soils are in higher positions in the landscape. In addition, Bigbee soils are sandy throughout and Bonneau soils have a thick, sandy surface layer and a loamy control section. Congaree soils are moderately well drained to well drained soils on bottom lands and do not have an argillic horizon. Gaylesville and Minter soils are in lower positions in the landscape—in depressions or along drainageways—and have a thicker solum. Also, Gaylesville soils are somewhat poorly drained and Minter soils are poorly drained. Wickham soils have a fine-loamy control section and are above Canton Bend soils in the landscape.

Typical pedon of Canton Bend fine sandy loam, 0 to 2 percent slopes, in a cultivated field, about 6.0 miles east of Selma, 700 feet north and 1,100 feet west of the southeast corner, NE1/4 sec. 7, T. 16 N., R. 12 E.:

Ap—0 to 7 inches; brown (10YR 5/3) fine sandy loam; weak fine granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

B21t—7 to 18 inches; yellowish red (5YR 4/8) silty clay loam; moderate fine subangular blocky structure; firm; few fine roots; thin patchy clay films on faces of most peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

B22t—18 to 33 inches; yellowish brown (5YR 5/8) silty clay loam; few medium distinct yellowish brown (10YR 5/4) mottles; moderate fine subangular blocky structure; firm; few fine roots; thin patchy clay films on faces of most peds; few black stains and small concretions; few fine flakes of mica; strongly acid; gradual wavy boundary.

B23t—33 to 52 inches; yellowish red (5YR 4/6) clay loam; common medium distinct yellowish brown (10YR 5/4) and pale brown (10YR 6/3) mottles; weak fine subangular blocky structure; friable; thin clay films on faces of some peds; few black stains; common fine flakes of mica; strongly acid; gradual wavy boundary.

B3—52 to 62 inches; mottled yellowish red (5YR 4/6), pale brown (10YR 6/3), and yellowish brown (10YR 5/6) loam; weak fine subangular blocky structure; friable; thin clay films on faces of a few peds; few black stains; many fine flakes of mica; strongly acid; gradual wavy boundary.

C—62 to 80 inches; mottled yellowish red (5YR 4/6), pale brown (10YR 6/3), and yellowish brown (10YR 5/6) stratified fine sandy loam and loam; massive; friable; many fine flakes of mica; strongly acid.

Solum thickness ranges from 40 to more than 60 inches. Reaction is strongly acid or very strongly acid except where limed. Some pedons have a few black stains and small concretions in the B horizon. There are few to common flakes of mica throughout the solum of most pedons.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4.

The upper part of the B2t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8 and is typically mottled in shades of brown. The lower part of the B2t horizon has colors similar to those in the upper part but also includes hue of 7.5YR, value of 5, and chroma of 6 or 8. It is typically mottled in shades of yellow and brown. Texture is clay loam, silty clay loam, or silty clay. The control section averages between 35 and 43 percent clay.

The B3 horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 6 or 8 with mottles in shades of brown, yellow, and red. Many pedons do not have a dominant matrix color but are mottled in shades of brown, yellow, and red. Texture is fine sandy loam or loam.

The C horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8 with mottles in shades of yellow and brown, or it is mottled in shades of red, yellow, or brown. It is loam, fine sandy loam, or loamy sand and is typically stratified. Gravelly strata are in some pedons.

Congaree series

The Congaree series consists of deep, well drained to moderately well drained, moderately permeable soils on flood plains. These soils formed in loamy alluvial sediments along the major creeks and rivers. Slope ranges from 0 to 4 percent.

Congaree soils are on first bottoms adjacent to Canton Bend and Wickham soils. Canton Bend and Wickham soils are on slightly higher stream terraces and have a yellowish red argillic horizon. In addition, Canton Bend soils have more than 35 percent clay in the control section.

Typical pedon of Congaree loam, 0 to 4 percent slopes, in a cultivated field, in Blackwell Bend, about 5 miles south of the Edmund Pettus Bridge at Selma, 500 feet east and 200 feet north of the southwest corner, SE1/4 sec. 25, T. 16 N., R 10 E.:

Ap—0 to 7 inches; dark yellowish brown (10YR 3/4) loam; weak medium granular structure; friable; common fine roots; common fine flakes of mica; slightly acid; clear smooth boundary.

C1—7 to 11 inches; dark yellowish brown (10YR 3/4) loam; massive; friable; few fine roots; common fine

flakes of mica; thin strata of brown (10YR 4/3) fine sandy loam; slightly acid; clear smooth boundary.

C2—11 to 18 inches; dark brown (10YR 3/3) loam; massive; friable; few fine roots; common fine flakes of mica; thin strata of brown (10YR 4/3) fine sandy loam; medium acid; clear smooth boundary.

C3—18 to 28 inches; dark brown (10YR 3/3) loam; massive; friable; few fine roots; common fine flakes of mica; medium acid; clear wavy boundary.

Bb1—28 to 54 inches; brown (10YR 4/3) silty clay loam; weak medium subangular blocky structure; friable; common fine flakes of mica; medium acid; gradual wavy boundary.

Bb2—54 to 72 inches; brown (7.5YR 4/4) silty clay loam; common medium distinct brown (10YR 5/3) mottles; weak medium subangular blocky structure; friable; common fine flakes of mica; medium acid.

Reaction ranges from strongly acid to neutral. Thin strata of contrasting textures are evident. Most horizons contain few to many fine flakes of mica. The control section averages between 18 and 27 percent clay.

The A horizon is 7 to 11 inches thick. It has hue of 10YR, value of 3 or 4, and chroma of 2 through 4.

The C horizon is 15 to more than 30 inches thick. It has hue of 10YR, value of 3 through 5, and chroma of 3 or 4. Texture is fine sandy loam or loam.

The buried horizons have hue of 10YR, value of 3 or 4, and chroma of 2 through 4. Texture is loam, fine sandy loam, or silty clay loam.

Demopolis series

The Demopolis series consists of shallow, well drained, moderately slowly permeable soils on uplands in the Blackland Prairie. These soils formed in chalky marine sediments. Slope ranges from 3 to 15 percent.

Demopolis soils are on the same landscape as Houston, Leeper, Oktibbeha, and Sumter soils. All of these soils have a thicker solum, a more clayey subsoil, and less than 35 percent coarse fragments in the control section. In addition, Leeper soils are below Demopolis soils on flood plains along drainageways and streams.

Typical pedon of Demopolis silty clay loam, 3 to 12 percent slopes, in a pasture about 3.5 miles north of Safford on Alabama Highway 5, 600 feet west and 50 feet south of the northeast corner, SW1/4 sec. 21, T. 16 N., R. 7 E.:

Ap—0 to 6 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate fine granular structure; friable; many fine roots; 5 percent small platy chalk fragments; calcareous; moderately alkaline; abrupt wavy boundary.

C—6 to 10 inches; grayish brown (2.5Y 5/2) silty clay loam; moderate fine granular structure; friable; 80 percent light gray (2.5Y 7/2) weakly consolidated thin flat fragments of chalk; common distinct streaks and splotches of yellow and brown along bedding planes; common fine roots in cracks, bedding planes, and soil material; calcareous; moderately alkaline; clear smooth boundary.

Cr—10 to 48 inches; light gray (2.5Y 7/2) chalk; common distinct streaks and splotches of yellow and brown; platy rock structure; hard to cut with spade; less than 2 percent ironstone nodules as much as 1 inch in diameter; calcareous; moderately alkaline.

The A horizon is 3 to 8 inches thick. It has hue of 2.5Y, value of 4 or 5, and chroma of 2. Fragments of chalk make up from 5 to 55 percent, by volume, of the A horizon and range from 2 to 150 mm across. Texture is silty clay loam or cobbly silty clay loam.

The C horizon is 0 to 7 inches thick. It has hue of 2.5Y or 5Y, value of 5 through 7, and chroma of 1 or 2. Content of flat fragments of chalk ranges from 65 to 80 percent, by volume. These fragments are mostly 2 to 75 mm across, but they range to 150 mm across.

The Cr horizon has hue of 2.5Y or 5Y, value of 5 through 7, and chroma of 1 or 2. Content of ironstone nodules ranges from 0 to 2 percent, by volume.

Gaylesville series

The Gaylesville series consists of deep, somewhat poorly drained, slowly permeable soils on stream terraces. These soils formed in thick, clayey sediments along the major creeks and rivers. Slope ranges from 0 to 2 percent.

Gaylesville soils are on the same landscape as Bigbee, Bonneau, Canton Bend, and Minter soils. Bigbee, Bonneau, and Canton Bend soils are in higher positions in the landscape. Bigbee soils are excessively drained and are sandy throughout. Bonneau soils have a thick, sandy surface layer and a loamy control section and are moderately well drained. Canton Bend soils have a yellowish red subsoil, are well drained, and have a thinner solum. Minter soils are poorly drained and are below Gaylesville soils in the landscape.

Typical pedon of Gaylesville loam in a pasture, 1,000 feet north and 300 feet west of the southeast corner, NW1/4 sec. 30, T. 17 N., R. 11 E.:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) loam; weak fine granular structure; very friable; many fine roots; many brown root stains; few small black concretions; medium acid; clear smooth boundary.

B1—6 to 12 inches; yellowish brown (10YR 5/8) loam; common fine distinct strong brown (7.5YR 5/8) and few medium distinct light gray (2.5Y 7/2) mottles; moderate fine subangular blocky structure; friable; few fine roots; thin clay films on faces of peds; few

small black concretions; strongly acid; clear wavy boundary.

B21tg—12 to 27 inches; mottled light brownish gray (2.5Y 6/2), yellowish brown (10YR 5/8), and yellowish red (5YR 4/8), clay; moderate fine subangular blocky structure; firm; few fine roots; thin clay films on faces of peds; few small black concretions; strongly acid; gradual wavy boundary.

B22tg—27 to 61 inches; light gray (5Y 7/1) clay; many medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; firm; few fine roots; thin clay films on faces of peds; few small black concretions and stains; strongly acid; gradual wavy boundary.

B3g—61 to 68 inches; light gray (5Y 7/1) clay loam; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; thin clay films on faces of peds; few small black concretions; strongly acid; clear smooth boundary.

Cg—68 to 78 inches; light gray (5Y 7/1) loamy fine sand; few coarse distinct yellowish brown (10YR 5/6) mottles; massive; very friable; common fine flakes of mica saturated with water; very strongly acid.

Solum thickness is 60 to more than 78 inches. Reaction is strongly acid or very strongly acid except in limed areas. A few small dark concretions and a few fine flakes of mica are throughout many pedons.

The A horizon has hue of 10YR, value of 3 through 5, and chroma of 2 or 3.

The B1 horizon is yellowish brown or light yellowish brown loam or clay loam mottled in shades of brown and gray.

The B2tg horizon has hue of 2.5Y, 5Y, or 10YR, value of 5 through 7, and chroma of 1 or 2 with mottles in shades of brown or red, or it is mottled in shades of gray, brown, and red. Texture is clay loam, silty clay, or clay. The control section averages between 35 and 45 percent clay.

The B3 horizon has colors similar to those in the B2tg horizon. Texture is clay loam, loam, or silty clay loam.

The C horizon is variable in color and texture and in many pedons contains few to common quartz pebbles.

Greenville series

The Greenville series consists of deep, well drained, moderately permeable soils on uplands in the Coastal Plain. These soils formed in clayey marine sediments. Slope ranges from 5 to 15 percent.

Greenville soils are on the same landscape as Lucy, Luverne, and Mantachie soils. Lucy and Luverne soils are in about the same position in the landscape. Lucy soils have a thick, sandy surface layer and a loamy control section. Luverne soils have a thinner solum and do not have a dark red Bt horizon. Mantachie soils are along drainageways, are somewhat poorly drained, and do not have an argillic horizon.

Typical pedon of Greenville loamy fine sand, 5 to 10 percent slopes, about 2.1 miles north of Valley Creek State Park, 600 feet east and 400 feet south of the northwest corner, NE1/4 sec. 19, T. 19 N., R. 11 E.:

Ap—0 to 7 inches; brown (7.5YR 5/4) loamy fine sand; weak medium granular structure; very friable; many fine, medium, and coarse roots; strongly acid.

B21t—7 to 26 inches; dark red (2.5YR 3/6) clay; moderate fine and medium subangular blocky structure; firm; common fine, medium, and coarse roots; thin clay films on faces of most peds; few clean sand grains; strongly acid; gradual wavy boundary.

B22t—26 to 45 inches; dark red (2.5YR 3/6) sandy clay; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; thin clay films on faces of peds; few clean sand grains; strongly acid; gradual wavy boundary.

B23t—45 to 72 inches; dark red (2.5YR 3/6) sandy clay; weak medium subangular blocky structure; friable; thin clay films on faces of some peds; very strongly acid.

Solum thickness ranges from 60 to more than 72 inches. Reaction is strongly acid or very strongly acid except in limed areas.

The A horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 3 through 6.

The Bt horizon has hue of 2.5YR or 10R, value of 3, and chroma of 6. Some pedons have color with value of 4 or have mottles in shades of brown or red in the lower part of the horizon. Texture is clay or sandy clay. The clay content gradually decreases with depth. The lower part of the Bt horizon in some pedons is sandy clay loam. The control section averages between 35 and 45 percent clay.

Houston series

The Houston series consists of deep, moderately well drained, very slowly permeable soils on uplands in the Blackland Prairie. These soils formed in slightly acid to alkaline clays over calcareous clays or Selma Chalk. Slope ranges from 1 to 5 percent.

Houston soils are on the same landscape as Demopolis, Leeper, Sumter, and Vaiden soils. Demopolis soils have a thinner solum and more than 35 percent coarse fragments in the control section. Leeper soils are on flood plains along drainageways and have less than 60 percent clay in the control section. Sumter soils have a thinner solum and a fine-silty control section. Vaiden soils are somewhat poorly drained and have distinct mottles within 20 inches of the surface.

Typical pedon of Houston clay, 1 to 5 percent slopes, in a pasture 1,000 feet north and 1,000 feet west of the southeast corner, NW1/4 sec. 2, T. 17 N., R. 8 E.:

Ap—0 to 10 inches; very dark gray (5Y 3/1) clay; moderate fine and medium granular structure; firm, very plastic; common fine roots; mildly alkaline; gradual smooth boundary.

A12—10 to 25 inches; dark olive gray (5Y 3/2) clay; moderate fine angular and subangular blocky structure; firm, sticky and very plastic; common fine roots; mildly alkaline; clear irregular boundary.

AC—25 to 42 inches; olive gray (5Y 4/2) clay; few fine faint very dark gray mottles; large wedge-shaped aggregates that are bordered by intersecting slickensides, parts to successively smaller angular blocky structure; firm, sticky and very plastic; few fine black concretions; common medium and coarse concretions of calcium carbonate; moderately alkaline; gradual wavy boundary.

C1—42 to 58 inches; olive (5Y 4/3) clay; few fine faint very dark gray mottles; large wedge-shaped aggregates that are bordered by intersecting slickensides, parts to angular blocky structure; extremely firm, sticky and very plastic; few fine black concretions, common medium and coarse concretions of calcium carbonate; calcareous; moderately alkaline; gradual wavy boundary.

C2—58 to 72 inches; light olive brown (2.5Y 5/6) clay; common fine distinct olive gray and few fine faint yellowish brown mottles; many large wedge-shaped aggregates that are bordered by intersecting slickensides, parts to angular blocky structure; extremely firm, plastic; few medium and coarse concretions of calcium carbonate; calcareous; moderately alkaline.

Depth to chalk ranges from 4 to 9 feet. Texture is clay throughout. Common to many slickensides are in the AC and C horizons. Cycles of microhighs and microlows are repeated at linear intervals of 6 to 12 feet. The amplitude, or waviness, of the boundary between A and AC horizons ranges from about 9 to 26 inches. Reaction ranges from slightly acid to mildly alkaline in the A horizon and from neutral to moderately alkaline in the AC and C horizons. Few to many concretions of calcium carbonate are throughout the soil.

The A horizon has hue of 5Y, 2.5Y, or 10YR, value of 2 or 3, and chroma of 1 or 2.

The AC horizon has hue of 5Y, value of 4 or 5, and chroma of 2 or 3. Many pedons have an AC horizon that is mottled in shades of brown or gray.

The C horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 3 through 6. Many pedons have a C horizon that is mottled in shades of brown, yellow, or gray.

Kipling series

The Kipling series consists of deep, somewhat poorly drained, very slowly permeable soils on terraces and uplands. These soils formed in thick, clayey marine and stream sediments in the Blackland Prairie. Slope ranges from 0 to 12 percent.

Kipling soils are on the same landscape as Angie, Oktibbeha, and Vaiden soils. Troup soils are on adjacent side slopes above the Kipling soils in some areas. Angie soils have mixed mineralogy and moderate shrink-swell potential in the subsoil. Leeper soils are on flood plains and do not have an argillic horizon. Oktibbeha and Vaiden soils have more than 60 percent clay in the control section. Troup soils have a thick, sandy surface layer and a loamy control section.

Typical pedon of Kipling loam, 0 to 1 percent slopes, in a pasture about 0.5 mile south of U.S. Highway 80 at Browns, 0.5 mile west of Alabama Highway 5, 1,300 feet west and 500 feet north of the southwest corner, NE1/4 sec. 22, T. 17 N., R. 7 E.:

Ap—0 to 5 inches; grayish brown (10YR 5/2) loam; weak medium granular structure; very friable; few fine roots; slightly acid; abrupt smooth boundary.

B21t—5 to 12 inches; yellowish brown (10YR 5/6) clay loam; common medium prominent gray (5Y 6/1) mottles; moderate fine subangular blocky structure; firm, sticky; few fine roots; few thin clay films on faces of peds; strongly acid; clear wavy boundary.

B22t—12 to 25 inches; mottled gray (5Y 6/1), red (2.5YR 4/6), and yellowish brown (10YR 5/6) clay loam; moderate fine subangular blocky structure; firm, sticky and plastic; few fine roots; few thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B3—25 to 43 inches; light gray (5Y 7/1) clay loam; many medium prominent yellowish brown (10YR 5/6) and red (2.5YR 4/6) mottles; moderate fine subangular blocky structure; firm, very sticky and plastic; few fine roots; few thin clay films on faces of peds; few medium slickensides; strongly acid; gradual wavy boundary.

C1—43 to 81 inches; mottled yellowish brown (10YR 5/8) and light gray (5Y 7/1) clay; moderate fine angular and subangular blocky structure; very firm, very sticky and plastic; few fine roots; many medium slickensides; many pressure faces on peds; strongly acid; clear wavy boundary.

C2—81 to 96 inches; mottled light olive brown (2.5Y 5/4), yellowish brown (10YR 5/8), and gray (5Y 6/1) clay; moderate fine angular and subangular blocky structure; very firm, very sticky and plastic; few fine roots; many medium slickensides; many pressure faces on peds; many black stains and concretions; neutral.

Reaction of the A and B horizons ranges from medium acid to very strongly acid, and reaction of the C horizon ranges from very strongly acid to moderately alkaline. A few dark concretions and a few small quartz pebbles are throughout most pedons.

The A horizon has hue of 10YR, value of 4 through 6, and chroma of 1 through 3. Some pedons have a thin A2 horizon of loam.

The B2t horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 through 8 with few to many mottles having chroma of 2 or less, or it is mottled in shades of yellow, brown, gray, and red. In some pedons, the lower part of the B2t horizon and the B3 and C horizons have hue of 10YR, 2.5Y, or 5Y, value of 6 or 7, and chroma of 1 or 2 with brown and yellow mottles. In many pedons, the B3 and C horizons are mottled in shades of yellow, red, brown, and gray. Texture is clay or clay loam.

There are no to many lime concretions in the C horizon.

Leeper series

The Leeper series consists of deep, somewhat poorly drained, very slowly permeable soils on first bottoms in the Blackland Prairie. These soils formed in thick, clayey alluvial sediments along drainageways and creeks. Slope ranges from 0 to 1 percent.

Leeper soils are on the same landscape adjacent to higher positioned Demopolis, Houston, Kipling, Oktibbeha, Sumter, and Vaiden soils. Demopolis soils have a thinner solum, are less clayey, and have coarse fragment content of more than 35 percent in the control section. Houston, Oktibbeha, and Vaiden soils have clay content of more than 60 percent in the control section. Kipling soils have an argillic horizon. Sumter soils have a thinner solum and a fine-silty control section.

Typical pedon of Leeper silty clay in a field, 1,400 feet east and 700 feet north of the southwest corner, SW1/4 sec. 14, T. 17 N., R. 8 E.:

Ap—0 to 8 inches; dark grayish brown (2.5Y 4/2) silty clay; moderate medium subangular blocky structure; firm, sticky and plastic; many fine roots; moderately alkaline; clear wavy boundary.

A12—8 to 14 inches; dark grayish brown (2.5Y 4/2) silty clay; few streaks of grayish brown (2.5Y 5/2) silty clay; moderate medium granular and moderate fine subangular blocky structure; firm, sticky and plastic; few fine roots; moderately alkaline; clear wavy boundary.

B2—14 to 60 inches; dark grayish brown (2.5Y 4/2) clay; many fine distinct olive brown (2.5Y 4/4) and few medium faint dark gray (5Y 4/1) mottles; moderate fine subangular and angular blocky structure; firm, sticky and plastic; few fine roots; pressure faces on peds; few small pitted lime concretions; few fine brown and black concretions; moderately alkaline; clear wavy boundary.

C—60 to 90 inches; coarsely mottled dark grayish brown (2.5Y 4/2), yellowish brown (10YR 5/6), and gray (5Y 5/1) clay; moderate fine angular blocky structure; firm, sticky and plastic; many medium slickensides; pressure faces on some peds; few small pitted lime concretions; few fine brown and black concretions; moderately alkaline.

Reaction ranges from slightly acid to moderately alkaline. Few small brown and black concretions are in the B and C horizons of many pedons. Most pedons have few to common pitted lime concretions throughout.

The A horizon has hue of 2.5Y or 10YR, value of 3 or 4, and chroma of 2.

The B horizon has hue of 2.5Y, value of 4, and chroma of 2, and it is mottled in shades of brown and gray. Many pedons do not have a matrix color but are mottled in shades of brown and gray.

The C horizon is mottled in shades of brown, yellow, or gray.

Lucedale series

The Lucedale series consists of deep, well drained, moderately permeable soils on uplands in the Coastal Plain. These soils formed in loamy, fluvial and marine sediments. Slope ranges from 0 to 8 percent.

Lucedale soils are on the same landscape as Bama, Pine Flat, and Savannah soils. Bama soils do not have a dark red B2t horizon. Pine Flat soils have a coarse-loamy control section. Savannah soils are moderately well drained and have a fragipan in the B horizon.

Typical pedon of Lucedale fine sandy loam, 0 to 2 percent slopes, in a cultivated field, 700 feet south and 200 feet east of the northwest corner, NE1/4 sec. 9, T. 16 N., R. 12 E.:

Ap—0 to 7 inches; dark reddish brown (5YR 3/3) fine sandy loam; weak medium granular structure; very friable; few fine roots; strongly acid; clear smooth boundary.

B21t—7 to 10 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; few pockets of dark reddish brown fine sandy loam; very strongly acid; clear smooth boundary.

B22t—10 to 72 inches; dark red (2.5YR 3/6) sandy clay loam; weak medium subangular blocky structure; friable; thin clay films on faces of some peds; very strongly acid; gradual wavy boundary.

B3—72 to 90 inches; red (2.5YR 4/6) fine sandy loam; weak medium subangular blocky structure; very friable; sand grains bridged and coated with clay; very strongly acid.

Solum thickness ranges from 60 to more than 90 inches. Reaction is strongly acid or very strongly acid except for the surface layer in limed areas.

The A horizon has hue of 5YR or 7.5YR, value of 3, and chroma of 2 through 4.

Some pedons have a B1 horizon having hue of 2.5YR, value of 3, and chroma of 4 through 6. Texture is fine sandy loam or loam.

The B2t horizon has hue of 2.5YR or 10R, value of 3, and chroma of 6. It is loam, sandy clay loam, or clay loam. The control section averages between 20 and 33 percent clay and between 20 and 30 percent silt.

The B3 horizon has hue of 2.5YR or 10R, value of 3 or 4, and chroma of 6 through 8. It is mottled in shades of red, brown, and gray in some pedons. Texture is fine sandy loam or sandy clay loam.

Lucy series

The Lucy series consists of deep, well drained soils on uplands in the Coastal Plain. These soils are rapidly permeable in the thick, sandy A horizon and moderately permeable in the Bt horizon. These soils formed in thick, sandy and loamy sediments. Slope ranges from 0 to 15 percent.

Lucy soils are on the same landscape as Bama, Brantley, Greenville, and Troup soils. Bama, Brantley, and Greenville soils have a surface layer less than 20 inches thick. Also, Brantley and Greenville soils have a more clayey Bt horizon. Troup soils have a sandy surface layer more than 40 inches thick.

Typical pedon of Lucy loamy fine sand, 5 to 10 percent slopes, in a field, 700 feet east and 800 feet north of the southwest corner, SW1/4 sec. 3, T. 18 N., R. 11 E.:

Ap—0 to 6 inches; brown (10YR 5/3) loamy fine sand; weak fine granular structure; very friable; many fine and medium roots; medium acid; abrupt smooth boundary.

A21—6 to 12 inches; brown (7.5YR 5/4) loamy fine sand; weak fine granular structure; very friable; many fine roots; few pockets of clean sand grains; strongly acid; clear wavy boundary.

A22—12 to 24 inches; brown (7.5YR 5/4) loamy fine sand; single grained; very friable; many fine roots; common pockets of clean sand grains; strongly acid; clear wavy boundary.

B1—24 to 29 inches; yellowish red (5YR 5/6) and red (2.5YR 4/6) sandy loam; weak fine subangular blocky structure; very friable; sand grains bridged and coated with clay; strongly acid; clear wavy boundary.

B21t—29 to 73 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

B22t—73 to 83 inches; red (2.5YR 4/8) sandy clay loam; common medium distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; strongly acid.

Solum thickness ranges from 60 to 83 inches. Reaction is strongly acid or very strongly acid except in limed areas.

The Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 2 or 3.

The A2 horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 3 through 8.

The B1 horizon has hue of 7.5YR, 5YR, or 2.5YR, value of 4 or 5, and chroma of 6 or 8.

The B2t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. Some pedons are mottled in the lower part of the Bt horizon with yellow or brown. Texture is sandy loam, sandy clay loam, or clay loam. The control section averages between 20 and 30 percent clay.

Luverne series

The Luverne series consists of deep, well drained, moderately slowly permeable soils that formed in clayey marine sediments in the Coastal Plain. Slope ranges from 4 to 30 percent.

Luverne soils are on the same landscape as Greenville and Mantachie soils. Greenville soils are on similar upland positions and have a thicker solum and a dark red Bt horizon. Mantachie soils are on flood plains along drainageways. They are somewhat poorly drained and do not have an argillic horizon.

Typical pedon of Luverne loamy sand, 4 to 10 percent slopes, in a forested area, 900 feet south and 300 feet west of the northeast corner, NE1/4 sec. 13, T. 19 N., R. 10 E.:

Ap—0 to 5 inches; brown (10YR 5/3) loamy sand; weak medium granular structure; very friable; many fine roots; few small iron crust fragments; strongly acid; abrupt wavy boundary.

B21t—5 to 17 inches; red (2.5YR 4/6) clay; strong fine and medium subangular blocky structure; firm; common fine, medium, and coarse roots; many thin clay films on faces of peds; few fine flakes of mica; very strongly acid; gradual wavy boundary.

B22t—17 to 24 inches; red (2.5YR 4/6) clay loam; few to common distinct yellowish brown (10YR 5/6) mottles; moderate fine and medium subangular blocky structure; firm; common fine, medium, and coarse roots; many thin clay films on faces of peds; few fine flakes of mica; few small iron crust fragments; very strongly acid; gradual wavy boundary.

B3—24 to 32 inches; red (2.5YR 4/6) sandy clay loam; few medium distinct yellowish brown (10YR 5/6)

mottles; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; many thin clay films on faces of peds; common flakes of mica; few small iron crust fragments; very strongly acid; gradual wavy boundary.

C—32 to 72 inches; yellowish red (5YR 4/6) stratified micaceous sands and gray clays; average texture is sandy clay loam; lenses of red, gray, and yellowish brown colors; massive; friable; few iron crust fragments; very strongly acid.

Solum thickness ranges from 20 to 48 inches. Reaction is strongly acid or very strongly acid. Most pedons have a few flat fragments of ironstone throughout.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 through 4.

The Bt horizon has hue of 5YR or 2.5YR, value of 3 through 5, and chroma of 4 through 8. It is mottled in shades of brown in most pedons. Texture is clay loam, sandy clay, or clay. The control section averages between 35 and 50 percent clay. This horizon has a few small shale fragments and a few fine flakes of mica in most pedons.

The B3 horizon has colors similar to those in the Bt horizon. Texture is sandy clay loam or clay loam. The B3 horizon has few to common fine flakes of mica and few to common small gray shale fragments.

The C horizon is stratified marine sediment high in content of mica. Average texture is fine sandy loam, but texture ranges to sandy clay loam. Colors are variable but include hue of 5YR or 2.5YR, value of 4 through 6, and chroma of 6 through 8. There are thin lenses of clayey shale throughout this horizon.

Mantachie series

The Mantachie series consists of deep, somewhat poorly drained, moderately permeable soils that formed in loamy sediments on first bottoms in the Coastal Plain. These soils are subject to frequent flooding. Slope ranges from 0 to 2 percent.

Mantachie soils are adjacent to Brantley, Greenville, and Luverne soils. These soils are on uplands, are well drained, and have an argillic horizon.

Typical pedon of Mantachie loam, in a pasture, 1,000 feet east and 400 feet south of the southwest corner, SW1/4 sec. 2, T. 19 N., R. 11 E.:

Ap—0 to 7 inches; brown (10YR 4/3) loam; weak medium granular structure; friable; many fine roots; few fine flakes of mica; medium acid; clear smooth boundary.

A12—7 to 14 inches; brown (10YR 4/3) loam; few thin strata of pale brown (10YR 6/3) fine sandy loam; few fine distinct very dark gray (10YR 3/1) mottles; loam part has weak medium granular structure and fine sandy loam part is massive; friable; common fine roots; few fine flakes of mica; strongly acid; clear wavy boundary.

C1g—14 to 63 inches; grayish brown (10YR 5/2) silt loam; common thin strata of light brownish gray (10YR 6/2) fine sandy loam and brown (7.5YR 5/4) loamy fine sand; common medium distinct brown (10YR 4/3) mottles; massive; friable; few fine roots; few fine flakes of mica; common soft black nodules and stains; strongly acid; clear wavy boundary.

C2g—63 to 90 inches; light gray (10YR 7/1) loam; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; massive; friable; few fine roots; few fine flakes of mica; few soft black nodules; strongly acid.

This soil is strongly acid or very strongly acid except in limed areas. Some pedons have few to common pebbles and a few flakes of mica throughout.

The A horizon has hue of 10YR, value of 4, and chroma of 3 or 4. In some pedons this horizon is mottled in shades of gray.

The C horizon has hue of 10YR or 2.5Y, value of 5 through 7, and chroma of 1 or 2. It is mottled in shades of gray, brown, or red. In some pedons the C horizon does not have a matrix color but is mottled in shades of gray, brown, or red. Texture is silt loam, loam, sandy loam, or loamy fine sand, and the horizon is typically stratified.

Mashulaville series

The Mashulaville series consists of deep, poorly drained, slowly permeable soils in the Coastal Plain. These soils formed in medium textured, old alluvial sediments. These soils are along drainageways and in depressional areas. They are saturated with water to near the surface during winter and spring. Slope ranges from 0 to 2 percent.

Mashulaville soils are on the same landscape as Angie, Benndale, Quitman, and Savannah soils. Angie, Benndale, and Quitman soils do not have a fragipan. Angie soils are moderately well drained and have a clayey control section. Benndale soils are well drained. Quitman soils are somewhat poorly drained and have a fine-loamy control section. Savannah soils are moderately well drained and have a fine-loamy control section.

Typical pedon of Mashulaville fine sandy loam, in an idle field, 300 feet north and 75 feet east of the southwest corner, SW1/4 sec. 25, T. 16 N., R. 8 E.:

Ap—0 to 5 inches; dark gray (10YR 4/1) fine sandy loam; weak fine granular structure; very friable; many fine roots; common clean sand grains; strongly acid; clear smooth boundary.

A2g—5 to 17 inches; gray (10YR 6/1) fine sandy loam; common medium faint gray (10YR 5/1) and few medium distinct yellowish brown (10YR 5/6) mottles;

weak fine granular structure; friable; slightly cemented in lower part; few fine roots; few fine pores; strongly acid; clear smooth boundary.

Bx1—17 to 26 inches; light gray (10YR 7/1) loam; common medium faint gray (10YR 5/1) and few medium distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure; upper few inches parts to weak very coarse platy structure; compact and brittle in more than 60 percent of the mass; many fine pores; strongly acid; abrupt wavy boundary.

Bx2—26 to 74 inches; gray (10YR 6/1) loam; common medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; slightly brittle and compact; thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B2tg—74 to 90 inches; coarsely mottled light gray (10YR 7/1), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/6) loam; weak coarse subangular blocky structure; firm; thin clay films on faces of peds; strongly acid.

Solum thickness ranges from 65 to more than 90 inches. Reaction is strongly acid or very strongly acid except in limed areas. A few small dark concretions and small rounded pebbles are throughout the solum in some pedons.

The A1 or Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 1 or 2. A few mottles in shades of brown are throughout the horizon in some pedons.

The A2 horizon has hue of 10YR or 2.5Y, value of 4 through 7, and chroma of 1 or 2 with few to common mottles in shades of brown. It is slightly cemented in the lower part in most pedons.

The Bx horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 through 7, and chroma of 1 or 2. It is mottled in shades of brown and red. Texture is loam, sandy clay loam, or clay loam. In most pedons the Btg horizon does not have a matrix color but is mottled in shades of gray, brown, or red.

Minter series

The Minter series consists of deep, poorly drained, very slowly permeable soils in sloughs and other low areas of stream terraces. These soils formed in thick, clayey alluvial sediments. Slope ranges from 0 to 2 percent.

Minter soils are on the same landscape as Canton Bend, Gaylesville, and Wickham soils. All of these soils are in higher positions in the landscape. Canton Bend and Wickham soils are well drained and have a thinner, yellowish red subsoil. Gaylesville soils are somewhat poorly drained and are not so gray in the subsoil as Minter soils.

Typical pedon of Minter loam, in a pasture, 1,200 feet north and 500 feet east of the southwest corner, NW1/4 sec. 29, T. 17 N., R. 11 E.:

Ap—0 to 5 inches; gray (10YR 5/1) loam; common medium faint light gray (10YR 6/1) mottles; weak medium granular structure; friable; many fine roots; strongly acid; clear wavy boundary.

B21tg—5 to 14 inches; light gray (10YR 6/1) silty clay loam; many medium distinct yellowish brown (10YR 5/8) mottles; moderate fine and medium subangular blocky structure; friable, slightly sticky and slightly plastic; few fine roots; thin patchy clay films on faces of most peds; strongly acid; clear wavy boundary.

B22tg—14 to 31 inches; light gray (N 6/0) clay; many medium distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/8) mottles; moderate fine subangular blocky structure; firm, sticky and plastic; few fine roots; thin patchy clay films on faces of most peds; strongly acid; gradual wavy boundary.

B23tg—31 to 44 inches; light gray (N 6/0) clay; many medium distinct yellowish brown (10YR 5/6) and common medium prominent red (2.5YR 4/6) mottles; moderate fine subangular blocky structure; firm, sticky and plastic; few fine roots; thin patchy clay films on faces of most peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

B24tg—44 to 72 inches; light gray (N 6/0) clay loam; many coarse distinct yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; moderate fine subangular blocky structure; firm, sticky and plastic; thin clay films on faces of most peds; few fine flakes of mica; strongly acid.

Solum thickness is 60 to 80 inches. Reaction is very strongly acid or strongly acid except in limed areas.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or less. Texture is loam or silt loam.

The Btg horizon has hue of 10YR, 2.5Y, or 5Y with value of 4 or 5 and chroma of 1 or less, or with value of 6 or 7 and chroma of 2 or less. It has few to many mottles in shades of brown, red, or gray. Texture is clay loam, silty clay loam, silty clay, or clay. The control section averages between 35 and 45 percent clay and more than 30 percent silt.

Oktibbeha series

The Oktibbeha series consists of deep, moderately well drained, very slowly permeable soils on uplands. These soils formed in clayey, acid marine sediments in the Blackland Prairie. They are underlain by chalk. Slope ranges from 1 to 12 percent.

Oktibbeha soils are on the same landscape as Demopolis, Kipling, Leeper, Sumter, and Vaiden soils. Demopolis soils have a thinner solum, are less clayey, and

have more than 35 percent coarse fragments in the control section. Kipling and Leeper soils have less than 60 percent clay in the control section. In addition, Leeper soils are on flood plains. Sumter soils have a thinner solum and a fine-silty control section. Vaiden soils are somewhat poorly drained and have gray mottles in the upper 10 inches of the argillic horizon.

Typical pedon of Oktibbeha clay, 1 to 5 percent slopes, in a pasture, 1,300 feet east and 50 feet south of the northwest corner, NW1/4 sec. 25, T. 17 N., R. 8 E.:

Ap—0 to 4 inches; brown (10YR 4/3) clay; moderate medium granular structure; hard, firm, sticky and plastic; many fine roots; few pockets of red (2.5YR 4/6) clay; neutral; clear wavy boundary.

B21t—4 to 12 inches; red (2.5YR 4/6) clay; common medium distinct mottles of yellowish brown (10YR 5/8); moderate fine subangular blocky structure; hard, firm, sticky and plastic; common fine roots; pressure faces on peds; few pockets of brown (10YR 4/3) clay; slightly acid; gradual wavy boundary.

B22t—12 to 20 inches; red (2.5YR 4/6) clay; common medium distinct yellowish brown (10YR 5/8) mottles; moderate fine subangular blocky structure; hard, firm, sticky and plastic; few fine roots; pressure faces on peds; strongly acid; gradual wavy boundary.

B23t—20 to 33 inches; mottled red (2.5YR 4/6), yellowish brown (10YR 5/8), and light olive gray (5Y 6/2) clay; moderate fine subangular and angular blocky structure; hard, firm, sticky and plastic; few fine roots; pressure faces on peds; strongly acid; clear wavy boundary.

B24t—33 to 43 inches; coarsely mottled yellowish brown (10YR 5/6), light olive gray (5Y 6/2), and red (2.5YR 4/6) clay; moderate fine subangular and angular blocky structure; hard, firm, sticky and plastic; pressure faces on peds; common medium slickensides; strongly acid; clear wavy boundary.

C1—43 to 47 inches; yellowish brown (10YR 5/6) clay; common medium and coarse distinct light olive gray (5Y 6/2) and red (2.5YR 4/6) mottles; moderate fine and medium angular blocky structure; firm; pressure faces on peds; common medium slickensides; neutral; clear wavy boundary.

C2—47 to 61 inches; mottled olive gray (5Y 5/2), yellowish brown (10YR 5/6), and olive brown (2.5Y 4/4) clay; moderate fine and medium angular blocky structure; very firm; common medium slickensides; many lime spots; moderately alkaline; clear wavy boundary.

IIC3—61 to 72 inches; partially weathered calcareous Selma Chalk.

Solum thickness over marly clay or chalk ranges from 30 to 50 inches. Reaction of the A and B horizons is very strongly acid through slightly acid except in limed areas. The C horizon is neutral to moderately alkaline. A few quartz pebbles are in some pedons.

The A horizon has hue of 10YR or 7.5YR, value of 3 through 5, and chroma of 2 through 4.

The upper part of the B2 horizon has hue of 2.5YR, 5YR, or 7.5YR, value of 4 or 5, and chroma of 4 through 8. Typically, it is mottled in shades of brown. The lower part of the B2 horizon has similar colors as the upper part but also includes hue of 10YR with few to many mottles in shades of brown and gray, or it is mottled in shades of brown, red, and gray. The control section averages between 60 and 70 percent clay.

The C horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 through 7, and chroma of 3 through 6. It has few to many mottles in shades of brown, or it is mottled in shades of olive, brown, and gray. There are few to many lime concretions. This horizon is marly clay or chalk.

Pine Flat series

The Pine Flat series consists of deep, well drained, moderately rapidly permeable soils in the Coastal Plain. These soils formed in coarse textured to medium textured sediments on uplands. Slope ranges from 0 to 3 percent.

Pine Flat soils are on the same landscape as Bama, Benndale, and Lucedale soils. Bama soils have a fine-loamy control section and do not have a dark red B2t horizon. Benndale soils are slightly lower in the landscape and do not have a dark red B2t horizon. Lucedale soils have a fine-loamy control section.

Typical pedon of Pine Flat sandy loam, 0 to 3 percent slopes, in a cultivated field, 700 feet south and 25 feet east of the northeast corner, NW1/4 sec. 17, T. 16 N., R. 12 E.:

Ap—0 to 8 inches; dark brown (7.5YR 3/2) sandy loam; weak fine granular structure; very friable; few fine roots; strongly acid; clear wavy boundary.

B1—8 to 18 inches; dark reddish brown (2.5YR 3/4) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; most sand grains bridged and coated with clay; strongly acid; clear wavy boundary.

B21t—18 to 61 inches; dark red (2.5YR 3/6) sandy loam; weak fine subangular blocky structure; very friable; few fine roots; most sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

B22t—61 to 96 inches; red (2.5YR 4/6) sandy loam; weak fine subangular blocky structure; most sand grains bridged and coated with clay; medium acid.

Solum thickness ranges from 60 to more than 96 inches. Reaction ranges from medium acid through very strongly acid except in limed areas.

The A horizon has hue of 5YR or 7.5YR, value of 3, and chroma of 2 or 3.

The B1 horizon has hue of 2.5YR or 5YR, value of 3, and chroma of 4 or 6.

The upper part of the Bt horizon has hue of 5YR or 2.5YR, value of 3, and chroma of 6. In most pedons below a depth of 40 inches, the Bt horizon has hue of 5YR or 2.5YR, value of 3 through 5, and chroma of 6. Texture is sandy loam, fine sandy loam, or sandy clay loam. The control section averages between 8 and 18 percent clay.

Quitman series

The Quitman series consists of deep, somewhat poorly drained, moderately slowly permeable soils in the Coastal Plain. These soils formed in loamy sediments along drainageways and in depressions. Slope ranges from 0 to 2 percent.

Quitman soils are on the same landscape as Mashulaville and Savannah soils. Mashulaville soils are in slightly lower positions in the landscape, are poorly drained, and have a fragipan. Savannah soils are in slightly higher positions in the landscape, are moderately well drained, and have a fragipan.

Typical pedon of Quitman fine sandy loam, in a cultivated field, 350 feet north and 200 feet west of the southeast corner, NW1/4 sec. 10, T. 14 N., R. 9 E.:

Ap—0 to 5 inches; dark gray (10YR 4/1) fine sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

A2—5 to 11 inches; light brownish gray (2.5Y 6/2) fine sandy loam; common medium distinct light yellowish brown (10YR 6/4) mottles; weak fine granular structure; friable, slightly cemented and compact; common fine roots; strongly acid; clear smooth boundary.

B21t—11 to 16 inches; light yellowish brown (10YR 6/4) fine sandy loam; common medium distinct yellowish brown (10YR 5/6) and light brownish gray (2.5Y 6/2) mottles; weak fine subangular blocky structure; friable, slightly cemented and compact; few fine roots; sand grains bridged and coated with clay; vertical cracks filled with light gray (5Y 7/1) fine sandy loam; strongly acid; clear wavy boundary.

B22t—16 to 30 inches; mottled yellowish brown (10YR 5/6), light gray (5Y 7/1), and light yellowish brown (10YR 6/4) loam; weak medium subangular blocky structure; friable, slightly compact; few fine roots; thin clay films on faces of peds; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

B23t—30 to 61 inches; mottled yellowish brown (10YR 5/6), light gray (5Y 7/1), and red (2.5YR 5/8) clay loam; moderate fine subangular blocky structure; firm, compact; thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B24t—61 to 72 inches; coarsely mottled yellowish brown (10YR 5/6) and light gray (5Y 7/1) clay loam; weak fine subangular blocky structure; firm, compact; thin clay films on faces of peds; some gray clay seams; strongly acid.

Solum thickness ranges from 60 to more than 72 inches. Reaction is strongly acid or very strongly acid except in limed areas. A few small dark concretions are throughout the solum in some pedons.

The A1 or Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 1 or 2.

The A2 horizon has hue of 10YR or 2.5Y, value of 6, and chroma of 2 through 4.

The upper part of the B2t horizon has a matrix color in hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 4 or 6. It has mottles in shades of brown, gray, or red. The lower part of the B2t horizon has similar colors or is mottled in shades of brown, gray, or red. Texture is loam, sandy clay loam, fine sandy loam, or clay loam. The control section averages between 18 and 25 percent clay. The B2t horizon is slightly compact in most pedons.

Saffell series

The Saffell series consists of deep, well drained, moderately permeable soils in the Coastal Plain. These soils formed in gravelly sediments on narrow ridgetops and side slopes. Slope ranges from 4 to 12 percent.

Saffell soils are on the same landscape as Bama and Savannah soils. Bama soils have a thicker solum and a fine-loamy control section. Savannah soils are moderately well drained and have a fine-loamy control section and a fragipan.

Typical pedon of Saffell gravelly fine sandy loam, 4 to 12 percent slopes, in a cultivated field, 1,200 feet north and 1,300 feet west of the southeast corner, NE1/4 sec. 31, T. 15 N., R. 9 E.:

Ap—0 to 6 inches; brown (10YR 4/3) gravelly fine sandy loam; weak medium granular structure; very friable; few fine roots; 15 percent rounded quartz pebbles; strongly acid; abrupt wavy boundary.

A2—6 to 11 inches; brown (10YR 5/3) gravelly fine sandy loam; weak medium granular structure; very friable, few fine roots; 35 percent rounded quartz pebbles; strongly acid; clear wavy boundary.

B1—11 to 17 inches; strong brown (7.5YR 5/6) very gravelly fine sandy loam; weak fine subangular blocky structure; friable; few fine roots; 50 percent rounded quartz pebbles; sand grains bridged and coated with clay; strongly acid; clear wavy boundary.

B2t—17 to 28 inches; yellowish red (5YR 5/6) very gravelly sandy clay loam; weak fine subangular blocky

structure; friable; few fine roots; 40 percent rounded quartz pebbles; sand grains bridged and coated with clay; thin clay films on faces of peds; strongly acid; gradual wavy boundary.

B3—28 to 37 inches; strong brown (7.5YR 5/6) very gravelly sandy loam; weak fine subangular blocky structure; very friable; 55 percent rounded quartz pebbles; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

C1—37 to 43 inches; strong brown (7.5YR 5/6) very gravelly loamy sand; single grained; loose; 60 percent rounded quartz pebbles; strongly acid; gradual wavy boundary.

C2—43 to 72 inches; reddish yellow (7.5YR 6/6) very gravelly loamy sand with splotches of yellowish red (5YR 4/6) and strong brown (7.5YR 5/6); single grained; loose; 70 percent rounded quartz pebbles; strongly acid.

Solum thickness ranges from 36 to 56 inches. Reaction is strongly acid or very strongly acid except in limed areas.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 through 4. Gravel content ranges from 15 to 50 percent.

The B1 horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 or 6. Gravel content ranges from 30 to 50 percent.

The B2t horizon has hue of 7.5YR, 5YR, or 2.5YR, value of 4 or 5, and chroma of 6. Texture is very gravelly fine sandy loam, very gravelly loam, or very gravelly sandy clay loam. The control section averages between 12 and 28 percent clay and between 35 and 55 percent gravel.

The B3 horizon has hue of 7.5YR, 5YR, or 2.5YR, value or 4 or 5, and chroma of 6. Texture is very gravelly sandy loam, very gravelly fine sandy loam, or very gravelly sandy clay loam. Gravel content ranges from 35 to 65 percent.

The C horizon has hue of 7.5YR or 5YR, value of 4 through 6, and chroma of 6. Some pedons have mottles in shades of red, brown, or yellow in this horizon. Texture is very gravelly sandy loam, very gravelly loamy sand, or very gravelly sand. Gravel content ranges from 50 to 80 percent.

Savannah series

The Savannah series consists of deep, moderately well drained, moderately slowly permeable soils in the Coastal Plain. These soils have a fragipan. They formed in medium textured sediments on uplands. They have a perched water table at a depth of about 2.5 feet in late winter and early spring. Slope ranges from 0 to 8 percent.

Savannah soils are on the same landscape as Angie, Bama, Benndale, Lucedale, Mashulaville, Quitman, and Saffell soils. Angie, Bama, Benndale, Lucedale, Quitman, and Saffell soils do not have a fragipan. Angie soils have a clayey control section. Bama and Lucedale soils are well drained and have a Bt horizon with redder hue. Benndale soils are well drained and have a coarse-loamy control section. Mashulaville and Quitman soils are in lower positions in depressions and along drainageways. Mashulaville soils are poorly drained and have a coarse-loamy control section. Quitman soils are somewhat poorly drained. Saffell soils are well drained and have more than 35 percent gravel in the control section.

Typical pedon of Savannah fine sandy loam, 0 to 2 percent slopes, in a cultivated field, 550 feet south and 1,000 feet west of the northeast corner, NE1/4 sec. 2, T. 15 N., R. 8 E.:

Ap—0 to 6 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak medium granular structure; very friable; common fine roots; slightly acid; abrupt wavy boundary.

A2—6 to 9 inches; pale brown (10YR 6/3) and yellowish brown (10YR 5/4) fine sandy loam; weak medium granular structure; friable, slightly compact; common fine roots; few fine pores; slightly acid; clear wavy boundary.

B21t—9 to 25 inches; yellowish brown (10YR 5/6) loam; weak medium subangular blocky structure; friable; common fine roots; few fine pores; sand grains coated and bridged with clay; clay coatings along some root channels; strongly acid; clear wavy boundary.

B22t—25 to 29 inches; yellowish brown (10YR 5/4) loam; few medium faint mottles of yellowish brown (10YR 5/6) and few medium distinct mottles of strong brown (7.5YR 5/6); weak medium subangular blocky structure; friable, slightly compact in lower part; few fine roots; common fine pores; sand grains bridged and coated with clay; strongly acid; clear wavy boundary.

Bx1—29 to 36 inches; mottled yellowish brown (10YR 5/4, 5/6), strong brown (7.5YR 5/6), and light gray (2.5Y 7/2) loam; moderate coarse prismatic structure, upper few inches parts to weak coarse platy; compact and brittle in about 65 percent of the mass; few fine roots in gray seams between prisms; many fine pores; few large pores; sand grains bridged and coated with clay; strongly acid; gradual wavy boundary.

Bx2—36 to 72 inches; mottled yellowish brown (10YR 5/6), red (2.5YR 4/6), and light gray (5Y 7/1) loam; weak coarse prismatic structure parting to weak medium subangular blocky; compact and brittle in about 65 percent of the mass; many fine pores; few large pores; few thin patchy clay films on faces of peds; strongly acid.

Solum thickness ranges from 60 to more than 80 inches. Reaction is strongly acid or very strongly acid except in limed areas. Some pedons have a few quartz pebbles throughout the solum.

The A horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 2 through 4.

The Bt horizon has hue of 7.5YR, 10YR, or 2.5Y, value of 5, and chroma of 4 through 8. Texture is sandy clay loam or loam. The control section averages 18 to 26 percent clay and 20 to 41 percent silt.

The Bx horizon is mottled in shades of yellow, brown, red, and gray. Texture is sandy loam or loam in the upper part of the Bx horizon, and loam, sandy clay loam, or clay loam in the lower part.

Sumter series

The Sumter series consists of moderately deep, well drained, slowly permeable soils on uplands in the Blackland Prairie. These soils formed in calcareous Selma Chalk. Slope ranges from 1 to 12 percent.

Sumter soils are on the same landscape as Demopolis, Houston, Leeper, Oktibbeha, and Vaiden soils. Demopolis soils have a thinner solum and more than 35 percent coarse fragments in the control section. Houston, Oktibbeha, and Vaiden soils have more than 60 percent clay in the control section. In addition, Houston and Oktibbeha soils are moderately well drained, and Vaiden soils are somewhat poorly drained. Leeper soils are along drainageways and streams and have more than 35 percent clay in the control section.

Typical pedon of Sumter silty clay, 1 to 5 percent slopes, in a pasture 0.6 mile west of the Black Belt Substation office, 1,000 feet east and 75 feet north of the southeast corner, SW1/4 sec. 2, T. 17 N., R. 8 E.:

Ap—0 to 6 inches; grayish brown (2.5Y 5/2) silty clay; moderate medium granular structure; friable, plastic; common fine roots; calcareous; moderately alkaline; clear smooth boundary.

B1—6 to 10 inches; light yellowish brown (2.5Y 6/4) and grayish brown (2.5Y 5/2) silty clay; moderate medium granular structure; friable, plastic; few fine roots; calcareous; moderately alkaline; gradual wavy boundary.

B2—10 to 21 inches; light yellowish brown (2.5Y 6/4) silty clay; few fine distinct brownish yellow (10YR 6/6) mottles; moderate fine subangular blocky structure; friable, plastic; few fine roots; few fine soft lime nodules; calcareous; moderately alkaline; gradual wavy boundary.

B3—21 to 28 inches; light yellowish brown (2.5Y 6/4) silty clay; common medium distinct light gray (2.5Y 7/2) and yellow (2.5Y 7/6) mottles; moderate fine subangular blocky structure; friable, slightly plastic; few fine soft lime nodules; few partially weathered platy fragments of chalk; calcareous; moderately alkaline; gradual wavy boundary.

Cr—28 to 60 inches; light gray (2.5Y 7/2) chalk; mottles and streaks of pale yellow (2.5Y 7/4), yellowish brown (10YR 5/8), white (5Y 8/1), and light olive gray (5Y 6/2) along cracks and seams; calcareous; moderately alkaline.

Solum thickness ranges from 20 to 35 inches. Noncarbonatic clay content ranges from 18 to 28 percent. The calcium carbonate equivalent ranges from about 40 to 65 percent.

The A horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 or 2.

The B horizon has hue of 2.5Y or 5Y, value of 5 through 7, and chroma of 3 or 4. It is mottled in shades of brown and yellow in most pedons. Texture is silty clay or clay. The B horizon has few to common soft lime accumulations and hardened lime nodules.

The Cr horizon has hue of 2.5Y or 5Y, value of 5 through 7, and chroma of 1 through 3. It is mottled in shades of yellow and brown along cracks and seams. It is chalk which can be cut with a spade.

Tadlock series

The Tadlock series consists of deep, well drained, moderately permeable soils in the Coastal Plain. These soils formed in thick, clayey marine sediments on uplands. Slope ranges from 0 to 10 percent.

Tadlock soils are on the same landscape as Brantley soils and are in a belt just south of the similar Greenville soils. Brantley soils have a thinner solum and do not have a dark red subsoil. Greenville soils have base saturation of less than 35 percent at a depth of 72 inches.

Typical pedon of Tadlock fine sandy loam, 0 to 2 percent slopes, in a pine plantation, 225 feet south and 330 feet east of the northeast corner, NW1/4 sec. 32, T. 18 N., R. 11 E.:

Ap—0 to 5 inches; dark reddish brown (5YR 3/4) fine sandy loam; weak medium granular structure; very friable; many fine roots; medium acid; abrupt wavy boundary.

B21t—5 to 23 inches; dark red (2.5YR 3/6) clay; moderate fine subangular blocky structure; friable; few fine roots; thin clay films on faces of most peds; few black coatings on faces of peds; few clean sand grains; medium acid; gradual wavy boundary.

B22t—23 to 63 inches; dark red (2.5YR 3/6) clay; moderate fine subangular blocky structure; friable; few fine roots; thin clay films on faces of most peds; few clean sand grains; medium acid; gradual wavy boundary.

B23t—63 to 72 inches; dark red (2.5YR 3/6) and red (2.5YR 4/6) clay; moderate fine subangular blocky

structure; friable; thin clay films on faces of most peds; few clean sand grains; slightly acid.

Solum thickness is more than 72 inches. Reaction is slightly acid to very strongly acid. Few small quartz pebbles are throughout some pedons.

The A horizon has hue of 2.5YR, 5YR, or 7.5YR, value of 3, and chroma of 2 through 4.

The upper part of the Bt horizon has hue of 5YR, 2.5YR, or 10R, value of 3, and chroma of 4 or 6. The lower part of the horizon has similar colors or has hue of 5YR or 2.5YR, value of 4, and chroma of 8. The lower part of the Bt horizon is mottled in shades of brown or yellow in some pedons. Texture is clay or clay loam. The control section averages between 35 and 50 percent clay. The clay content gradually decreases with depth. Many pedons have some dark coatings of manganese and few iron or manganese concretions in the Bt horizon.

Troup series

The Troup series consists of deep, well drained soils in the Coastal Plain. These soils are rapidly permeable in the thick, sandy A horizon and moderately permeable in the Bt horizon. They formed in thick, sandy and loamy sediments on upland ridgetops and side slopes. Slope ranges from 4 to 25 percent.

Troup soils are on the same landscape as Bama and Lucy soils and are on adjacent side slopes above Kipling soils in some areas. Bama soils are on broader ridgetops and do not have a thick, sandy surface layer. Kipling soils are somewhat poorly drained, have a clayey subsoil, and do not have a thick, sandy surface layer. Lucy soils are in similar positions as Troup soils and have a sandy surface layer less than 40 inches thick.

Typical pedon of Troup loamy fine sand, 4 to 10 percent slopes, in an idle field, 120 feet east and 100 feet south of the northeast corner, SE1/4 sec. 11, T. 13 N., R. 9 E.:

Ap—0 to 7 inches; brown (10YR 4/3) loamy fine sand; weak fine and medium granular structure; very friable; many fine roots; very strongly acid; abrupt smooth boundary.

A21—7 to 18 inches; yellowish brown (10YR 5/4) loamy fine sand; weak fine and medium granular structure; very friable; few fine roots; some small pockets of clean sand grains; very strongly acid; gradual wavy boundary.

A22—18 to 45 inches; brown (7.5YR 5/4) loamy fine sand; single grained; loose; small pockets of clean sand grains; very strongly acid; gradual wavy boundary.

A23—45 to 61 inches; reddish yellow (7.5YR 6/6) and pale brown (10YR 6/3) loamy fine sand; single grained; loose; pale brown (10YR 6/3) pockets of clean sand grains; very strongly acid; gradual wavy boundary.

B1—61 to 65 inches; yellowish red (5YR 5/6) sandy loam; weak medium subangular blocky structure; very friable; sand grains bridged and coated with clay; very strongly acid; clear wavy boundary.

B2t—65 to 96 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; few fine flakes of mica; very strongly acid.

Solum thickness is 80 to more than 96 inches. Reaction is strongly acid or very strongly acid except in limed areas.

The Ap horizon has hue of 10YR, value of 3 through 5, and chroma of 3 or 4.

The A2 horizon has hue of 10YR or 7.5YR, value of 4 through 6, and chroma of 3 through 8. It is loamy fine sand or fine sand.

Many pedons have a thin B1 horizon of yellowish red fine sandy loam.

The Bt horizon has hue of 2.5YR through 10YR, value of 4 or 5, and chroma of 6 or 8. Texture is sandy loam or sandy clay loam.

Vaiden series

The Vaiden series consists of deep, somewhat poorly drained, very slowly permeable soils on uplands in the Blackland Prairie. These soils formed in thick, acid, clayey sediments underlain by marly clay or chalk. Slope ranges from 0 to 5 percent.

Vaiden soils are on the same landscape as Houston, Kipling, Leeper, Oktibbeha, and Sumter soils. Houston soils are moderately well drained and do not have distinct mottles within 20 inches of the surface. Kipling and Leeper soils have less than 60 percent clay in the control section. In addition, Leeper soils are on flood plains. Oktibbeha soils are moderately well drained and do not have gray mottles in the upper 10 inches of the argillic horizon. Sumter soils are well drained and have a fine-silty control section.

Typical pedon of Vaiden clay, 0 to 1 percent slopes, in a pasture, 300 feet west and 250 feet north of the northwest corner, SE1/4 sec. 3, T. 17 N., R. 8 E.:

Ap—0 to 4 inches; very dark grayish brown (10YR 3/2) clay; weak fine granular structure; hard, firm, sticky and very plastic; common fine roots; slightly acid; abrupt wavy boundary.

B21t—4 to 18 inches; yellowish brown (10YR 5/8) clay; many medium distinct light brownish gray (2.5Y 6/2) and few fine prominent red (2.5YR 4/8) mottles; moderate medium angular and subangular blocky structure; firm, very sticky and very plastic; common fine roots; strongly acid; clear wavy boundary.

B22t—18 to 26 inches; mottled yellowish brown (10YR 5/8) and light gray (5Y 7/1) clay; few fine prominent red (2.5YR 4/8) mottles; moderate fine angular blocky structure; firm, very sticky and very plastic; few fine roots; few fine slickensides that do not intersect; few fine black concretions; strongly acid; gradual wavy boundary.

C1—26 to 40 inches; gray (5Y 6/1) faces of slickensides; interiors are mottled gray (5Y 6/1) and light olive brown (2.5Y 5/6) clay; many coarse intersecting slickensides that part to weak fine angular blocky structure; firm, very plastic; few fine roots along faces of slickensides; medium acid; gradual wavy boundary.

C2—40 to 62 inches; gray (5Y 6/1) faces of slickensides; interiors are gray (5Y 6/1) with coarse mottles of yellowish brown (10YR 5/6) clay; many coarse intersecting slickensides that part to weak fine angular blocky structure; firm, very plastic; grooved shiny faces on slickensides; few black concretions; slightly acid; clear wavy boundary.

C3—62 to 80 inches; mottled light olive brown (2.5Y 5/6, 5/4) and light gray (5Y 7/1) clay; massive, a few medium slickensides; firm, very plastic; common fine and medium black concretions; few soft spots of calcium carbonate; few hard pitted calcium carbonate nodules; mildly alkaline; clear wavy boundary.

Depth to alkaline material ranges from 3 to 8 feet. Reaction of the upper part of the solum is medium acid to very strongly acid except in limed areas. The lower part of the solum is strongly acid to moderately alkaline. There are many intersecting slickensides at a depth of 24 inches or more. There are a few small dark concretions throughout some pedons.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3.

The B horizon has hue of 10YR or 2.5Y, value of 5, and chroma of 4 through 8. It is mottled in shades of gray, brown, or red. Some subhorizons do not have a matrix color but are mottled yellow, brown, gray, or red.

The C horizon is mottled gray, yellow, brown, or red, or it has a matrix color of gray with mottles of yellow, brown, and red. There are few to many lime nodules in the lower part of this horizon.

Wickham series

The Wickham series consists of deep, well drained, moderately permeable soils. These soils formed in loamy sediments on stream terraces along the rivers and major creeks. They are subject to brief flooding during periods of unusually high rainfall. Slope ranges from 0 to 5 percent.

Wickham soils are on the same landscape as Bigbee, Bonneau, Canton Bend, and Minter soils, and are adjacent to Congaree soils. Bigbee and Bonneau soils are in slightly higher positions in the landscape. In addition, Bigbee soils are sandy throughout and Bonneau soils have a sandy surface layer 20 to 40 inches thick. Canton Bend soils are in slightly lower positions in the landscape and have a clayey control section. Minter soils are poorly drained and have a thicker solum and a clayey control section. Congaree soils are on first bottoms and do not have an argillic horizon.

Typical pedon of Wickham fine sandy loam, 0 to 2 percent slopes, in a field, 150 feet west and 50 feet south of the northeast corner, SW1/4 sec. 11, T. 16 N., R. 10 E.:

Ap—0 to 7 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; very friable; common fine roots; medium acid; abrupt wavy boundary.

B1—7 to 12 inches; yellowish red (5YR 5/6) fine sandy loam; weak fine subangular blocky structure; friable; few fine roots; sand grains bridged and coated with clay; medium acid; clear wavy boundary.

B21t—12 to 21 inches; yellowish red (5YR 4/6) sandy clay loam; weak fine subangular blocky structure; friable; few fine roots; thin patchy clay films on faces of peds; few flakes of mica; strongly acid; gradual wavy boundary.

B22t—21 to 35 inches; yellowish red (5YR 5/6) sandy clay loam; moderate fine subangular blocky structure; friable; thin clay films on faces of peds; yellowish red (5YR 4/6) clay coatings on peds; few flakes of mica; strongly acid; gradual wavy boundary.

B3—35 to 43 inches; strong brown (7.5YR 5/6) sandy loam; weak fine subangular blocky structure; very friable; sand grains bridged and coated with clay; few flakes of mica; strongly acid; gradual wavy boundary.

C1—43 to 59 inches; strong brown (7.5YR 5/8) loamy fine sand; single grained; very friable to loose; few quartz pebbles less than 1/2 inch in diameter; common flakes of mica; strongly acid; gradual wavy boundary.

C2—59 to 72 inches; brownish yellow (10YR 6/6) sand; single grained; loose; few quartz pebbles less than 1/2 inch in diameter; common flakes of mica; very strongly acid.

Solum thickness ranges from 40 to 54 inches. Reaction is very strongly acid to medium acid except in limed areas. Few to many pebbles are in the lower part of the B horizon and in the C horizon of many pedons. Few to common flakes of mica are in most pedons.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4.

The B1 horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 through 8. Texture is fine sandy loam or sandy clay loam.

The Bt horizon has hue of 5YR, value of 4 or 5, and chroma of 4 through 8. Texture is sandy clay loam or clay loam. The control section averages between 20 and 30 percent clay.

The B3 horizon has hue of 5YR or 7.5YR, value of 5, and chroma of 6 or 8. Texture is sandy loam or sandy clay loam.

The C horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 6 or 8. In some pedons, it is mottled in shades of yellow or brown. Texture is sandy loam, loamy fine sand, or sand.

Classification of the soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to "Soil taxonomy" (*10*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 20, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Fluvent (*Fluv*, meaning river, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Udifluvents (*Ud*, meaning humid, plus *fluvents*, the suborder of Entisols that is on the flood plain).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceeding the name of the great group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Udifluvents.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is fine-loamy, mixed, nonacid, thermic, Typic Udifluvents.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to frequent flooding.

Calcareous soil. A soil containing enough calcium carbonate (commonly with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid. A soil having measurable amounts of calcium carbonate or magnesium carbonate.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control soil blowing.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water control measures is difficult.

Complex, soil. A map unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Compressible. Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated

compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour farming. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is 40 or 80 inches (1 or 2 meters).

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Depth to rock. Bedrock at a depth that adversely affects the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime. Excess carbonates. Excessive carbonates, or lime, restrict the growth of some plants.

Fast intake. The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May*, for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forage. Plant material used as feed by domestic animals. Forage can be grazed or cut for hay.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Green manure (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:
A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered, but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Landslide. The rapid downhill movement of a mass of soil and loose rock generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones. Rock fragments 10 inches (25 centimeters) or more across. Large stones adversely affect the specified use.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. Inadequate strength for supporting loads.

Marine deposit. Material deposited in the waters of oceans and seas and exposed by geological uplift of the land or by lowering of the water level.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is greater than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous areas. Areas that have little or no natural soil, are too nearly inaccessible for orderly examination, or cannot otherwise be feasibly classified.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Moderately fine textured (moderately heavy textured) soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

Pan. A compact, dense layer in a soil. A pan impedes the movement of water and the growth of roots. The word "pan" is commonly combined with other words that more explicitly indicate the nature of the layer; for example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the basis of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Piping. Moving water forms subsurface tunnels or pipelike cavities in the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Productivity (soil). The capability of a soil for producing a specified plant or sequence of plants under a specified system of management. Productivity is measured in terms of output, or harvest, in relation to input.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulates over disintegrating rock.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate

types. Some wind-deposited sand is consolidated into sandstone.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slow intake. The slow movement of water into the soil.

Slow refill. The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones. Rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. Small stones adversely affect the specified use.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *very coarse sand* (2.0 millimeters to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil, or partly worked into the soil, to provide protection from soil blowing and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer. Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Trace elements. The chemical elements in soils, in only extremely small amounts, essential to plant growth. Examples are zinc, cobalt, manganese, copper, and iron.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Unstable fill. Risk of caving or sloughing in banks of fill material.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to a soil or soil material consisting of particles well distributed over a wide range in size or diameter. Such a soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

ILLUSTRATIONS

Figure 1.—Typical landscape in an area of the Luverne-Greenville unit on the general soil map. This unit is used mainly as woodland.

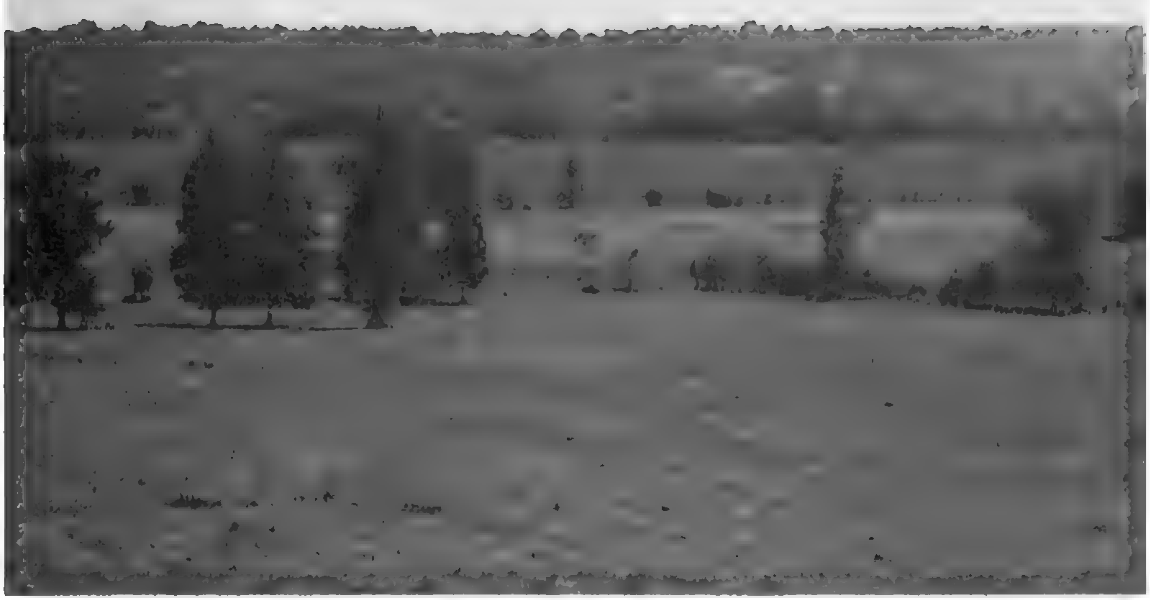

Figure 2.—Typical landscape at the contact of the Blackland Prairie and the Coastal Plain. The trees in the background are in an area of the Bama-Troup-Kipling unit, and the pasture in the foreground is in an area of the Oktibbeha-Demopolis unit.

Figure 3.—Corn growing on Bama fine sandy loam, 0 to 2 percent slopes.

Figure 4.—Coastal bermudagrass hay on Bigbee sand, 0 to 5 percent slopes.

Figure 5.—Young stand of pine on Greenville loamy fine sand, 5 to 10 percent slopes.

Figure 6.—Cracks at the surface in Houston clay, 1 to 5 percent slopes, caused by soil shrinking during periods of low rainfall. The very high shrink-swell potential is a severe limitation for foundations for buildings.

Figure 7.—Water on the surface in an area of Minter silt loam, ponded.

Figure 8.—Cotton ready to harvest in an area of Savannah fine sandy loam, 0 to 2 percent slopes.

Figure 9.—Dallisgrass and white clover pasture in an area of Vaiden clay, 1 to 5 percent slopes.

Figure 10.—Wheat growing in an area of Wickham fine sandy loam, 0 to 2 percent slopes.

TABLES

TABLE 1.--TEMPERATURE AND PRECIPITATION DATA

Month	Temperature[1]						Precipitation[1]				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days[2]	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F		In	In	In		In
January----	58.9	38.1	48.5	79	14	113	4.50	2.71	6.11	7	.2
February---	62.9	40.8	51.9	81	19	158	5.07	3.05	6.87	7	.0
March------	69.7	46.5	58.1	86	26	283	6.47	3.84	8.81	8	.0
April------	79.0	54.6	66.8	90	36	504	4.99	2.41	7.10	6	.0
May--------	85.8	61.7	73.8	96	44	738	3.61	1.48	5.33	6	.0
June-------	91.4	68.6	80.0	101	56	900	4.08	1.83	5.91	6	.0
July-------	93.0	71.4	82.2	101	63	998	4.56	2.52	6.21	8	.0
August-----	93.0	70.7	81.9	100	60	989	3.41	1.79	4.72	6	.0
September--	88.7	65.9	77.3	99	49	819	3.67	1.37	5.51	6	.0
October----	79.3	54.2	66.8	93	33	521	3.06	.91	4.80	4	.0
November---	68.0	43.9	56.0	84	24	191	3.12	2.19	3.98	5	.0
December---	61.1	40.0	50.6	80	17	138	5.91	3.06	8.24	8	.0
Year-----	77.6	54.7	66.2	103	12	6,352	52.45	44.58	60.03	77	.2

[1]Recorded in the period 1951-73 at Selma, Alabama.

[2]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

Probability	Minimum temperature[1]		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 7	March 18	April 1
2 years in 10 later than--	February 23	March 9	March 26
5 years in 10 later than--	January 30	February 19	March 13
First freezing temperature in fall:			
1 year in 10 earlier than--	November 16	November 3	October 26
2 years in 10 earlier than--	November 25	November 10	November 1
5 years in 10 earlier than--	December 12	November 25	November 11

[1]Recorded in the period 1951-73 at Selma, Alabama.

TABLE 3.--GROWING SEASON LENGTH

Probability	Daily minimum temperature during growing season[1]		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	273	245	218
8 years in 10	287	257	226
5 years in 10	315	278	242
2 years in 10	355	300	258
1 year in 10	>365	311	267

[1]Recorded in the period 1951-73 at Selma, Alabama.

TABLE 4.--POTENTIALS AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR SPECIFIED USES

Map unit	Extent of area	Cultivated farm crops	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
	Pct					
1. Luverne-Greenville	11	Poor: slope.	Good	Poor: slope, percs slowly, low strength.	Fair to poor: slope, percs slowly.	Good.
2. Brantley-Tadlock	5	Good	Good	Fair: low strength, shrink-swell, percs slowly.	Good to fair: percs slowly.	Good.
3. Sumter-Houston-Vaiden	7	Fair: erodes easily, too clayey.	Fair: excess lime, too clayey.	Poor: shrink-swell, low strength, percs slowly.	Poor: too clayey, percs slowly.	Fair: too clayey,
4. Savannah-Mashulaville-Quitman.	23	Fair: wetness.	Good	Fair to poor: wetness, low strength, percs slowly.	Fair: wetness.	Good.
5. Minter-Canton Bend-Gaylesville.	22	Fair: wetness, floods.	Good	Poor: wetness, floods.	Fair: wetness, floods.	Good.
6. Bama-Troup-Kipling	11	Fair: slope.	Good	Fair: slope.	Fair: slope.	Good.
7. Oktibbeha-Demopolis	8	Poor: slope, rooting depth, too clayey.	Fair to poor: excess lime, too clayey, rooting depth.	Poor: depth to rock, shrink-swell, percs slowly.	Poor: depth to rock, too clayey, percs slowly.	Good.
8. Kipling-Vaiden-Leeper	13	Fair: too clayey, wetness.	Good to fair: excess lime, wetness, too clayey.	Poor: wetness, shrink-swell, percs slowly, floods.	Fair to poor: wetness, too clayey, percs slowly, floods.	Good.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
2	Angie fine sandy loam, 0 to 2 percent slopes	2,419	0.4
3	Angie fine sandy loam, 2 to 5 percent slopes	4,456	0.7
4	Angie fine sandy loam, 5 to 12 percent slopes	3,377	0.5
5	Bama fine sandy loam, 0 to 2 percent slopes	5,570	0.9
6	Bama fine sandy loam, 2 to 5 percent slopes	9,795	1.6
7	Bama fine sandy loam, 5 to 12 percent slopes	3,769	0.6
8	Bama-Urban land complex, 0 to 8 percent slopes	411	0.1
9	Benndale fine sandy loam, 0 to 3 percent slopes	6,939	1.1
10	Benndale-Urban land complex, 0 to 3 percent slopes	725	0.1
11	Bigbee sand, 0 to 5 percent slopes	13,328	2.1
12	Bigbee-Urban land complex, 0 to 5 percent slopes	1,379	0.2
13	Bonneau loamy fine sand, 0 to 5 percent slopes	4,902	0.8
14	Bonneau-Urban land complex, 0 to 5 percent slopes	468	0.1
15	Brantley fine sandy loam, 0 to 2 percent slopes	1,007	0.2
16	Brantley fine sandy loam, 2 to 5 percent slopes	6,968	1.1
17	Brantley fine sandy loam, 5 to 10 percent slopes	3,559	0.6
18	Brantley-Lucy association, hilly	3,167	0.5
19	Canton Bend fine sandy loam, 0 to 2 percent slopes	24,922	4.0
20	Canton Bend fine sandy loam, 2 to 5 percent slopes	4,869	0.8
21	Canton Bend-Urban land complex, 0 to 5 percent slopes	749	0.1
22	Congaree loam, 0 to 4 percent slopes	9,547	1.5
23	Demopolis silty clay loam, 3 to 12 percent slopes	11,202	1.8
24	Demopolis cobbly silty clay loam, 5 to 15 percent slopes	1,019	0.2
25	Gaylesville loam	16,825	2.7
26	Gaylesville-Urban land complex	618	0.1
27	Greenville loamy fine sand, 5 to 10 percent slopes	5,853	0.9
28	Gullied land	3,331	0.5
29	Houston clay, 1 to 5 percent slopes	13,776	2.2
30	Kipling loam, 0 to 1 percent slopes	23,235	3.7
31	Kipling loam, 1 to 5 percent slopes	13,862	2.2
32	Kipling-Urban land complex, 0 to 5 percent slopes	553	0.1
33	Leeper silty clay	34,912	5.6
34	Lucedale fine sandy loam, 0 to 2 percent slopes	5,331	0.9
35	Lucedale fine sandy loam, 2 to 5 percent slopes	1,501	0.2
36	Lucedale fine sandy loam, 5 to 8 percent slopes	1,767	0.3
37	Lucy loamy fine sand, 0 to 5 percent slopes	2,043	0.3
38	Lucy loamy fine sand, 5 to 10 percent slopes	3,782	0.6
39	Luverne loamy sand, 4 to 10 percent slopes	2,618	0.4
40	Luverne-Greenville association, hilly	47,407	7.6
41	Mantachie loam	20,119	3.2
42	Mashulaville fine sandy loam	23,885	3.8
43	Minter loam	27,539	4.4
44	Minter silt loam, ponded	5,344	0.9
45	Oktibbeha clay, 1 to 5 percent slopes	14,233	2.3
46	Oktibbeha clay, 5 to 12 percent slopes	20,611	3.3
47	Pine Flat sandy loam, 0 to 3 percent slopes	2,455	0.4
48	Pits	1,649	0.3
49	Quitman fine sandy loam	14,436	2.3
50	Saffell gravelly fine sandy loam, 4 to 12 percent slopes	2,990	0.5
51	Savannah fine sandy loam, 0 to 2 percent slopes	28,971	4.7
52	Savannah fine sandy loam, 2 to 5 percent slopes	21,959	3.5
53	Savannah fine sandy loam, 5 to 8 percent slopes	6,453	1.0
54	Savannah-Urban land complex, 1 to 8 percent slopes	1,780	0.3
55	Sumter silty clay, 1 to 5 percent slopes	15,558	2.5
56	Sumter silty clay, 5 to 12 percent slopes	6,463	1.0
57	Sumter-Urban land complex, 1 to 8 percent slopes	815	0.1
58	Tadlock fine sandy loam, 0 to 2 percent slopes	1,020	0.2
59	Tadlock fine sandy loam, 2 to 5 percent slopes	3,436	0.6
60	Tadlock fine sandy loam, 5 to 10 percent slopes	1,417	0.2
61	Troup loamy fine sand, 4 to 10 percent slopes	2,101	0.3
62	Troup-Kipling association, hilly	41,614	6.7
63	Udifluvents, 4 to 25 percent slopes, channeled	5,108	0.8
64	Urban land	209	(*)
65	Vaiden clay, 0 to 1 percent slopes	18,050	2.9
66	Vaiden clay, 1 to 5 percent slopes	10,641	1.7
67	Wickham fine sandy loam, 0 to 2 percent slopes	8,980	1.4
68	Wickham fine sandy loam, 2 to 5 percent slopes	2,361	0.4
	Water	12,162	2.0
	Total	624,320	100.0

* Less than 0.1 percent.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Corn	Cotton lint	Wheat	Soybeans	Grass-legume hay	Grass-clover	Tall fescue
	Bu	Lb	Bu	Bu	Ton	AUM*	AUM*
2-------- Angie	70	600	25	30	5.5	8.0	7.0
3-------- Angie	60	550	25	25	5.5	7.5	6.5
4-------- Angie	---	---	---	---	4.0	7.0	6.0
5-------- Bama	90	1,000	40	40	6.0	10.0	6.5
6-------- Bama	85	900	35	35	5.5	9.5	6.0
7-------- Bama	60	500	25	25	4.5	7.5	5.0
8-------- Bama-Urban land	---	---	---	---	---	---	---
9-------- Benndale	75	700	35	30	5.5	8.0	5.0
10-------- Benndale-Urban land	---	---	---	---	---	---	---
11-------- Bigbee	---	---	25	---	4.0	6.0	---
12-------- Bigbee-Urban land	---	---	---	---	---	---	---
13-------- Bonneau	75	700	35	30	5.0	7.5	---
14-------- Bonneau-Urban land	---	---	---	---	---	---	---
15-------- Brantley	90	900	40	45	6.0	10.0	7.0
16-------- Brantley	80	800	35	40	6.0	10.0	6.5
17-------- Brantley	50	450	25	20	5.0	8.0	5.0
18**:							
Brantley--------	---	---	---	---	3.0	6.0	4.0
Lucy--------	---	---	---	---	3.0	6.0	4.0
19-------- Canton Bend	100	1,000	40	45	6.5	10.5	8.0
20-------- Canton Bend	90	900	35	40	6.0	10.0	8.0
21-------- Canton Bend-Urban land	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Wheat	Soybeans	Grass-legume hay	Grass-clover	Tall fescue
	Bu	Lb	Bu	Bu	Ton	AUM*	AUM*
22 Congaree	125	800	35	45	6.5	10.5	10.0
23 Demopolis	---	---	---	---	4.0	4.5	---
24 Demopolis	---	---	---	---	---	4.0	---
25 Gaylesville	60	550	---	30	5.5	9.0	8.0
26 Gaylesville-Urban land	---	---	---	---	---	---	---
27 Greenville	70	600	30	25	4.5	8.0	6.0
28** Gullied land	---	---	---	---	---	---	---
29 Houston	70	700	30	45	5.0	8.0	8.0
30 Kipling	60	550	---	30	4.0	8.0	6.5
31 Kipling	60	550	---	25	4.0	8.0	6.5
32 Kipling-Urban land	---	---	---	---	---	---	---
33 Leeper	70	600	---	40	6.0	10.0	10.0
34 Lucedale	90	900	40	40	6.0	10.0	6.5
35 Lucedale	85	800	35	35	5.5	9.5	6.0
36 Lucedale	60	500	25	25	4.5	7.5	5.0
37 Lucy	70	650	35	30	5.0	7.5	---
38 Lucy	55	450	25	25	4.0	6.0	---
39 Luverne	55	450	25	25	4.0	7.5	5.0
40**:							
Luverne	---	---	---	---	---	---	---
Greenville	---	---	---	---	4.0	6.5	5.0
41 Mantachie	---	---	---	---	4.0	8.0	8.0
42 Mashulaville	---	---	---	20	4.0	7.5	7.5
43 Minter	---	---	---	---	4.0	7.0	8.0

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Wheat	Soybeans	Grass-legume hay	Grass-clover	Tall fescue
	Bu	Lb	Bu	Bu	Ton	AUM*	AUM*
44 Minter	---	---	---	---	---	---	---
45 Oktibbeha	60	550	30	35	5.0	8.5	8.0
46 Oktibbeha	---	---	---	---	4.0	7.5	7.0
47 Pine Flat	70	600	35	30	5.5	8.0	5.0
48** Pits	---	---	---	---	---	---	---
49 Quitman	60	550	---	30	6.0	9.0	8.0
50 Saffell	55	450	25	25	4.5	6.0	---
51 Savannah	90	900	30	40	6.0	10.0	8.0
52 Savannah	85	800	30	35	6.0	9.0	8.0
53 Savannah	50	450	25	25	4.5	7.5	5.5
54 Savannah-Urban land	---	---	---	---	---	---	---
55 Sumter	60	500	25	25	5.0	7.5	7.0
56 Sumter	---	---	---	---	4.0	6.0	5.5
57 Sumter-Urban land	---	---	---	---	---	---	---
58 Tadlock	100	1,000	40	45	6.5	11.0	8.0
59 Tadlock	95	900	35	40	6.0	10.0	8.0
60 Tadlock	70	600	25	30	5.0	10.0	7.0
61 Troup	55	450	---	22	4.0	6.0	---
62**:							
Troup	---	---	---	---	---	---	---
Kipling	---	---	---	---	---	---	---
63** Udifluvents	---	---	---	---	---	---	---
64** Urban land	---	---	---	---	---	---	---
65 Vaiden	55	550	---	40	5.0	8.5	8.0

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn	Cotton lint	Wheat	Soybeans	Grass-legume hay	Grass-clover	Tall fescue
	Bu	Lb	Bu	Bu	Ton	AUM*	AUM*
66------------------------- Vaiden	55	550	---	40	5.0	8.5	8.0
67------------------------- Wickham	95	900	40	40	5.5	9.0	7.0
68------------------------- Wickham	85	800	35	35	5.5	9.0	7.0

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available. Site index was calculated at age 30 for eastern cottonwood, at age 35 for American sycamore, and at age 50 for all other species]

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
2, 3, 4 Angie	2w	Slight	Moderate	Slight	Slight	Loblolly pine	90	Loblolly pine.
						Slash pine	90	
						Longleaf pine	80	
						Sweetgum	90	
5, 6, 7 Bama	2o	Slight	Slight	Slight	Slight	Loblolly pine	90	Loblolly pine.
						Slash pine	90	
						Longleaf pine	75	
9 Benndale	2o	Slight	Slight	Slight	Slight	Loblolly pine	95	Loblolly pine.
						Longleaf pine	80	
						Slash pine	95	
11 Bigbee	2s	Slight	Moderate	Moderate	Slight	Loblolly pine	90	Loblolly pine.
						Slash pine	90	
13 Bonneau	2s	Slight	Moderate	Moderate	Slight	Loblolly pine	95	Loblolly pine, longleaf pine.
						Longleaf pine	75	
15, 16, 17 Brantley	3o	Slight	Slight	Slight	Slight	Loblolly pine	85	Loblolly pine.
						Slash pine	85	
18*:								
Brantley	3o	Slight	Slight	Slight	Slight	Loblolly pine	85	Loblolly pine.
						Slash pine	85	
Lucy	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	80	Loblolly pine, longleaf pine.
						Longleaf pine	70	
						Slash pine	80	
19, 20 Canton Bend	3o	Slight	Slight	Slight	Slight	Yellow-poplar	90	Yellow-poplar, loblolly pine.
						Loblolly pine	80	
						Shortleaf pine	70	
						Sweetgum	80	
22 Congaree	1o	Slight	Moderate	Moderate	Slight	Sweetgum	100	Loblolly pine, yellow-poplar, American sycamore, black walnut, eastern cottonwood, sweetgum.
						Yellow-poplar	110	
						Cherrybark oak	110	
						Loblolly pine	100	
						Eastern cottonwood	110	
						American sycamore	100	
						Black walnut	100	
						Water oak	100	
23, 24 Demopolis	4d	Moderate	Moderate	Severe	Moderate	Eastern redcedar	40	Eastern redcedar.
25 Gaylesville	3w	Slight	Moderate	Slight	Moderate	Yellow-poplar	90	Yellow-poplar, loblolly pine.
						Sweetgum	80	
						Loblolly pine	80	
27 Greenville	3o	Slight	Slight	Slight	Slight	Loblolly pine	85	Loblolly pine.
						Longleaf pine	70	
						Slash pine	85	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
29----------------- Houston	4c	Slight	Moderate	Moderate	Slight	Eastern redcedar----	40	Eastern redcedar.
30, 31------------- Kipling	2c	Slight	Moderate	Moderate	Moderate	Cherrybark oak------ Loblolly pine------- Shumard oak--------- Sweetgum------------ Water oak----------- White oak-----------	90 90 85 90 90 80	Loblolly pine, sweetgum.
33----------------- Leeper	1w	Slight	Severe	Severe	Moderate	Eastern cottonwood-- Sweetgum------------ Green ash----------- American sycamore---	110 95 90 110	Eastern cottonwood, sweetgum, American sycamore.
34, 35, 36--------- Lucedale	2o	Slight	Slight	Slight	Slight	Loblolly pine------- Longleaf pine------- Slash pine----------	90 75 90	Loblolly pine.
37, 38------------- Lucy	3s	Slight	Moderate	Moderate	Slight	Loblolly pine------- Longleaf pine------- Slash pine----------	80 70 80	Loblolly pine, longleaf pine.
39----------------- Luverne	3c	Slight	Moderate	Slight	Slight	Loblolly pine------- Slash pine---------- Longleaf pine-------	85 85 70	Loblolly pine.
40*:								
Luverne-----------	3c	Slight	Moderate	Slight	Slight	Loblolly pine------- Slash pine---------- Longleaf pine-------	85 85 70	Loblolly pine.
Greenville--------	3o	Slight	Slight	Slight	Slight	Loblolly pine------- Longleaf pine------- Slash pine----------	85 70 85	Loblolly pine.
41----------------- Mantachie	1w	Slight	Severe	Severe	Moderate	Green ash----------- Eastern cottonwood-- Cherrybark oak------ Loblolly pine------- Sweetgum------------ Yellow-poplar------- Water oak-----------	90 110 100 100 95 110 100	Eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
42----------------- Mashulaville	3w	Slight	Severe	Severe	Severe	Loblolly pine------- Sweetgum------------ Water oak-----------	85 75 75	Loblolly pine.
43----------------- Minter	2w	Slight	Severe	Severe	Moderate	Loblolly pine------- Slash pine---------- Sweetgum------------ Water oak----------- Blackgum------------ Southern red oak---- Cherrybark oak------ Shumard oak---------	90 90 90 90 --- --- --- ---	Loblolly pine, sweetgum.
44----------------- Minter	3w	Slight	Severe	Severe	Severe	Baldcypress--------- Water tupelo--------	--- ---	
45, 46------------- Oktibbeha	3c	Slight	Moderate	Moderate	Moderate	Loblolly pine------- Shortleaf pine------ Eastern redcedar---- Southern red oak----	80 70 50 70	Loblolly pine, eastern redcedar.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
47: Pine Flat	2o	Slight	Slight	Slight	Slight	Loblolly pine	90	Loblolly pine.
						Slash pine	90	
						Longleaf pine	80	
49: Quitman	2w	Slight	Moderate	Slight	Moderate	Water oak	90	Loblolly pine, sweetgum, American sycamore, yellow-poplar.
						Loblolly pine	90	
						Slash pine	90	
						Sweetgum	95	
50: Saffell	4f	Slight	Slight	Moderate	Slight	Loblolly pine	70	Loblolly pine.
						Shortleaf pine	60	
						Longleaf pine	60	
51, 52, 53: Savannah	2o	Slight	Slight	Slight	Moderate	Loblolly pine	90	Loblolly pine, sweetgum, American sycamore, yellow-poplar.
						Longleaf pine	80	
						Slash pine	90	
						Sweetgum	85	
55, 56: Sumter	4c	Moderate	Moderate	Moderate	Slight	Eastern redcedar	40	Eastern redcedar.
58, 59, 60: Tadlock	3o	Slight	Slight	Slight	Slight	Loblolly pine	85	Loblolly pine.
						Slash pine	85	
61: Troup	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	80	Loblolly pine, longleaf pine.
						Longleaf pine	65	
						Slash pine	85	
62*:								
Troup	3s	Slight	Moderate	Moderate	Slight	Loblolly pine	80	Loblolly pine, longleaf pine.
						Longleaf pine	65	
						Slash pine	85	
Kipling	2c	Slight	Moderate	Moderate	Moderate	Cherrybark oak	90	Loblolly pine, sweetgum.
						Loblolly pine	90	
						Shumard oak	85	
						Sweetgum	90	
						Water oak	90	
						White oak	80	
65, 66: Vaiden	3c	Slight	Moderate	Moderate	Moderate	Loblolly pine	75	Loblolly pine, eastern redcedar.
						Shortleaf pine	70	
						Eastern redcedar	45	
						Southern red oak	70	
67, 68: Wickham	2o	Slight	Slight	Slight	Slight	Loblolly pine	90	Loblolly pine, yellow-poplar.
						Slash pine	90	
						Yellow-poplar	100	
						Southern red oak	80	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
2, 3: Angie	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
4: Angie	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength, slope.	Severe: shrink-swell, low strength.
5, 6: Bama	Slight	Slight	Slight	Slight	Moderate: low strength.
7: Bama	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.
8*:					
Bama	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.
Urban land.					
9: Benndale	Slight	Slight	Slight	Slight	Moderate: low strength.
10*:					
Benndale	Slight	Slight	Slight	Slight	Moderate: low strength.
Urban land.					
11: Bigbee	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.
12*:					
Bigbee	Severe: cutbanks cave.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.
Urban land.					
13: Bonneau	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.
14*:					
Bonneau	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.
Urban land.					
15, 16: Brantley	Moderate: too clayey.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Severe: low strength.
17: Brantley	Moderate: too clayey.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: slope, low strength, shrink-swell.	Severe: low strength.
18*:					
Brantley	Moderate: too clayey, slope.	Moderate: slope, low strength, shrink-swell.	Moderate: slope, low strength, shrink-swell.	Severe: slope.	Severe: low strength.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
18*:					
Lucy	Moderate: slope, cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
19, 20 Canton Bend	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods.
21*:					
Canton Bend	Moderate: floods, too clayey.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength.
Urban land.					
22 Congaree	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
23 Demopolis	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: depth to rock, slope.	Moderate: depth to rock.
24 Demopolis	Severe: depth to rock.	Severe: slope.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, large stones.
25 Gaylesville	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
26*:					
Gaylesville	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Urban land.					
27 Greenville	Moderate: too clayey.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.
28*. Gullied land					
29 Houston	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, corrosive, low strength.	Severe: shrink-swell, low strength.
30, 31 Kipling	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength, corrosive.	Severe: shrink-swell, low strength.
32*:					
Kipling	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength, corrosive.	Severe: shrink-swell, low strength.
Urban land.					
33 Leeper	Severe: wetness, floods, too clayey.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: shrink-swell, wetness, floods.	Severe: shrink-swell, wetness, floods.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
34, 35 Lucedale	Slight	Slight	Slight	Slight	Slight.
36 Lucedale	Slight	Slight	Slight	Moderate: slope.	Slight.
37 Lucy	Moderate: cutbanks cave.	Slight	Slight	Slight	Slight.
38 Lucy	Moderate: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight.
39 Luverne	Moderate: too clayey.	Severe: low strength.	Severe: low strength.	Severe: low strength.	Severe: low strength.
40*:					
Luverne	Severe: slope.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.	Severe: slope, low strength.
Greenville	Moderate: too clayey, slope.	Moderate: low strength, slope.	Moderate: low strength, slope.	Severe: slope.	Moderate: slope, low strength.
41 Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
42 Mashulaville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
43, 44 Minter	Severe: wetness, floods, too clayey.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.	Severe: wetness, floods, low strength.
45 Oktibbeha	Severe: too clayey.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.
46 Oktibbeha	Severe: too clayey.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell, slope.	Severe: low strength, shrink-swell.
47 Pine Flat	Slight	Slight	Slight	Slight	Slight.
48*. Pits					
49 Quitman	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness, low strength.
50 Saffell	Severe: small stones.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
51, 52 Savannah	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, corrosive.	Moderate: low strength.
53 Savannah	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope, corrosive.	Moderate: low strength.

See footnote at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
54*:					
Savannah	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, corrosive.	Moderate: low strength.
Urban land.					
55 Sumter	Severe: depth to rock, too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
56 Sumter	Severe: depth to rock, too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: slope, shrink-swell, low strength.	Severe: shrink-swell, low strength.
57*:					
Sumter	Severe: depth to rock, too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.
Urban land.					
58, 59 Tadlock	Moderate: too clayey.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Severe: low strength.
60 Tadlock	Moderate: too clayey.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell, slope.	Severe: low strength.
61 Troup	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight.
62*:					
Troup	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Kipling	Severe: too clayey.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength.	Severe: shrink-swell, low strength, slope.	Severe: shrink-swell, low strength.
63*. Udifluvents					
64*. Urban land					
65, 66 Vaiden	Severe: too clayey, wetness.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.
67, 68 Wickham	Moderate: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Moderate: floods.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2 Angie	Severe: percs slowly.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Poor: too clayey.
3 Angie	Severe: percs slowly.	Moderate: slope, wetness.	Severe: wetness.	Moderate: wetness.	Poor: too clayey.
4 Angie	Severe: percs slowly.	Severe: slope.	Severe: wetness.	Moderate: slope, wetness.	Poor: too clayey.
5 Bama	Slight	Moderate: seepage.	Slight	Slight	Good.
6 Bama	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
7 Bama	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
8*:					
Bama	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
Urban land.					
9 Benndale	Slight	Moderate: seepage.	Slight	Slight	Good.
10*:					
Benndale	Slight	Moderate: seepage.	Slight	Slight	Good.
Urban land.					
11 Bigbee	Moderate: floods.	Severe: floods, seepage.	Severe: seepage, wetness.	Severe: seepage.	Fair: too sandy.
12*:					
Bigbee	Moderate: floods.	Severe: floods, seepage.	Severe: seepage, wetness.	Severe: seepage.	Fair: too sandy.
Urban land.					
13 Bonneau	Moderate: wetness.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Fair: too sandy.
14*:					
Bonneau	Moderate: wetness.	Severe: seepage.	Severe: wetness.	Moderate: wetness.	Fair: too sandy.
Urban land.					
15 Brantley	Severe: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
16 Brantley	Severe: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight	Fair: too clayey.

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
17----------------- Brantley	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
18*:					
Brantley-----------	Severe: percs slowly.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey.
Lucy---------------	Moderate: slope.	Severe: seepage.	Slight-----------	Moderate: slope.	Fair: slope.
19, 20------------- Canton Bend	Severe: floods, percs slowly.	Severe: floods.	Severe: floods.	Severe: floods.	Fair: too clayey.
21*:					
Canton Bend--------	Severe: percs slowly.	Severe: floods.	Moderate: floods, too clayey.	Moderate: floods.	Fair: too clayey.
Urban land.					
22----------------- Congaree	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Good.
23----------------- Demopolis	Severe: percs slowly, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Slight-----------	Poor: thin layer.
24----------------- Demopolis	Severe: percs slowly, depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Moderate: slope.	Poor: thin layer.
25----------------- Gaylesville	Severe: floods, percs slowly, wetness.	Slight-----------	Severe: floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
26*:					
Gaylesville--------	Severe: floods, percs slowly, wetness.	Slight-----------	Severe: floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
Urban land.					
27----------------- Greenville	Moderate: percs slowly.	Severe: slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
28*. Gullied land					
29----------------- Houston	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight-----------	Poor: too clayey.
30----------------- Kipling	Severe: percs slowly.	Slight-----------	Severe: too clayey.	Moderate: wetness.	Poor: too clayey.
31----------------- Kipling	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey.
32*:					
Kipling------------	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey.
Urban land.					

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
33 Leeper	Severe: percs slowly, wetness, floods.	Slight	Severe: too clayey, floods, wetness.	Severe: floods, wetness.	Poor: too clayey, wetness.
34, 35, 36 Lucedale	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
37, 38 Lucy	Slight	Severe: seepage.	Slight	Slight	Good.
39 Luverne	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Slight	Poor: thin layer.
40*:					
Luverne	Severe: slope, percs slowly.	Severe: slope.	Severe: too clayey.	Severe: slope.	Poor: slope, thin layer.
Greenville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: too clayey.	Moderate: slope.	Fair: too clayey, slope.
41 Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Good.
42 Mashulaville	Severe: percs slowly, wetness.	Slight	Severe: wetness, percs slowly.	Severe: wetness.	Poor: wetness.
43, 44 Minter	Severe: percs slowly, wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods, too clayey.	Severe: wetness, floods.	Poor: thin layer, wetness.
45 Oktibbeha	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey.
46 Oktibbeha	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: slope.	Poor: too clayey.
47 Pine Flat	Slight	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Good.
48*. Pits					
49 Quitman	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
50 Saffell	Severe: slope.	Severe: slope.	Slight	Moderate: slope.	Poor: small stones.
51 Savannah	Severe: percs slowly.	Slight	Slight	Slight	Good.
52, 53 Savannah	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
54*:					
Savannah	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Urban land.					

See footnote at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
55 Sumter	Severe: percs slowly, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Slight	Poor: too clayey.
56 Sumter	Severe: percs slowly, depth to rock.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: slope.	Poor: too clayey.
57*:					
Sumter	Severe: percs slowly, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Slight	Poor: too clayey.
Urban land.					
58 Tadlock	Moderate: percs slowly.	Slight	Severe: too clayey.	Slight	Poor: too clayey.
59 Tadlock	Moderate: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey.
60 Tadlock	Moderate: percs slowly.	Severe: slope.	Severe: too clayey.	Slight	Poor: too clayey.
61 Troup	Slight	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy.
62*:					
Troup	Severe: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage, slope.	Poor: slope.
Kipling	Severe: percs slowly.	Severe: slope.	Severe: too clayey.	Moderate: wetness.	Poor: too clayey.
63*. Udifluvents					
64*. Urban land					
65 Vaiden	Severe: percs slowly.	Slight	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey.
66 Vaiden	Severe: percs slowly.	Moderate: slope.	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey.
67, 68 Wickham	Moderate: floods.	Severe: floods.	Moderate: floods.	Moderate: floods.	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and "poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2, 3: Angie	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
4: Angie	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope, thin layer.
5, 6, 7: Bama	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too clayey.
8*:				
Bama	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Urban land.				
9: Benndale	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
10*:				
Benndale	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Urban land.				
11: Bigbee	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
12*:				
Bigbee	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Urban land.				
13: Bonneau	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy.
14*:				
Bonneau	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too sandy.
Urban land.				
15, 16, 17: Brantley	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
18*:				
Brantley	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
Lucy	Good	Fair: excess fines, thin layer.	Poor: excess fines.	Fair: too sandy.
19, 20: Canton Bend	Poor: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too clayey.
21*:				
Canton Bend	Poor: low strength.	Poor: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Urban land.				

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
22: Congaree	Fair: low strength.	Unsuited	Unsuited	Good.
23: Demopolis	Poor: thin layer, area reclaim.	Poor: excess fines, thin layer.	Poor: excess fines, thin layer.	Poor: thin layer, small stones.
24: Demopolis	Poor: thin layer, area reclaim.	Poor: excess fines, thin layer.	Poor: excess fines, thin layer.	Poor: thin layer, large stones.
25: Gaylesville	Poor: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, wetness.
26*:				
Gaylesville	Poor: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, wetness.
Urban land.				
27: Greenville	Fair: low strength.	Poor: excess fines.	Poor: excess fines.	Fair: too clayey, thin layer.
28*. Gullied land				
29: Houston	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
30, 31: Kipling	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
32*:				
Kipling	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Urban land.				
33: Leeper	Poor: shrink-swell, low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, wetness.
34, 35, 36: Lucedale	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
37, 38: Lucy	Good	Fair: excess fines, thin layer.	Poor: excess fines.	Fair: too sandy.
39: Luverne	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
40*:				
Luverne	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, slope.
Greenville	Fair: low strength.	Poor: excess fines.	Poor: excess fines.	Fair: too clayey, thin layer.

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
41----------------- Mantachie	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
42----------------- Mashulaville	Poor: wetness.	Unsuited------------	Unsuited------------	Poor: wetness.
43, 44------------- Minter	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer, wetness.
45, 46------------- Oktibbeha	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
47----------------- Pine Flat	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
48*. Pits				
49----------------- Quitman	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
50----------------- Saffell	Good----------------	Poor: excess fines.	Fair: excess fines.	Poor: small stones.
51, 52, 53--------- Savannah	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
54*: Savannah-----------	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Urban land.				
55, 56------------- Sumter	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
57*: Sumter-------------	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Urban land.				
58, 59, 60--------- Tadlock	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: thin layer.
61----------------- Troup	Good----------------	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
62*: Troup--------------	Fair: slope.	Fair: excess fines.	Unsuited: excess fines.	Poor: slope, too sandy.
Kipling------------	Poor: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
63*. Udifluvents				
64*. Urban land				

See footnote at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
65, 66 Vaiden	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
67, 68 Wickham	Good	Unsuited	Unsuited	Fair: thin layer.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
2------------------ Angie	Favorable------	Hard to pack---	No water-------	Not needed-----	Not needed-----	Percs slowly.
3------------------ Angie	Favorable------	Hard to pack---	No water-------	Not needed-----	Percs slowly---	Percs slowly.
4------------------ Angie	Favorable------	Hard to pack---	No water-------	Not needed-----	Slope, percs slowly.	Slope, percs slowly.
5, 6--------------- Bama	Seepage--------	Favorable------	No water-------	Not needed-----	Favorable------	Favorable.
7------------------ Bama	Seepage--------	Favorable------	No water-------	Not needed-----	Favorable------	Slope.
8*:						
Bama---------------	Seepage--------	Favorable------	No water-------	Not needed-----	Favorable------	Favorable.
Urban land.						
9------------------ Benndale	Seepage--------	Piping, seepage.	No water-------	Not needed-----	Erodes easily	Erodes easily, slope.
10*:						
Benndale-----------	Seepage--------	Piping, seepage.	No water-------	Not needed-----	Erodes easily	Erodes easily, slope.
Urban land.						
11----------------- Bigbee	Seepage--------	Seepage, piping.	No water-------	Not needed-----	Not needed-----	Droughty.
12*:						
Bigbee-------------	Seepage--------	Seepage, piping.	No water-------	Not needed-----	Not needed-----	Droughty.
Urban land.						
13----------------- Bonneau	Seepage--------	Thin layer-----	Deep to water, slow refill.	Not needed-----	Too sandy------	Favorable.
14*:						
Bonneau------------	Seepage--------	Thin layer-----	Deep to water, slow refill.	Not needed-----	Too sandy------	Favorable.
Urban land.						
15, 16------------- Brantley	Favorable------	Compressible---	No water-------	Not needed-----	Favorable------	Favorable.
17----------------- Brantley	Favorable------	Compressible---	No water-------	Not needed-----	Slope----------	Slope.
18*:						
Brantley-----------	Favorable------	Compressible---	No water-------	Not needed-----	Slope----------	Slope.
Lucy---------------	Seepage--------	Seepage, piping.	No water-------	Not needed-----	Too sandy, slope.	Droughty, slope.
19, 20------------- Canton Bend	Seepage--------	Thin layer-----	No water-------	Not needed-----	Erodes easily	Erodes easily, percs slowly.
21*:						
Canton Bend--------	Seepage--------	Thin layer-----	No water-------	Not needed-----	Erodes easily	Erodes easily, percs slowly.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
21*:						
Urban land.						
22----------------- Congaree	Seepage---------	Compressible, piping, low strength.	Deep to water	Not needed-----	Not needed-----	Not needed.
23----------------- Demopolis	Depth to rock	Thin layer-----	No water--------	Not needed-----	Depth to rock, erodes easily, slope.	Erodes easily, rooting depth, slope.
24----------------- Demopolis	Depth to rock	Thin layer, large stones.	No water--------	Not needed-----	Depth to rock, large stones, slope.	Erodes easily, rooting depth, slope.
25----------------- Gaylesville	Favorable------	Low strength---	No water--------	Floods, wetness, poor outlets.	Poor outlets, percs slowly.	Wetness, percs slowly.
26*:						
Gaylesville------	Favorable------	Low strength---	No water--------	Floods, wetness, poor outlets.	Poor outlets, percs slowly.	Wetness, percs slowly.
Urban land.						
27----------------- Greenville	Seepage---------	Favorable------	No water--------	Not needed-----	Favorable------	Favorable.
28*. Gullied land						
29----------------- Houston	Favorable------	Hard to pack---	No water--------	Not needed-----	Percs slowly, erodes easily.	Favorable.
30, 31------------ Kipling	Favorable------	Unstable fill	No water--------	Percs slowly, slope.	Percs slowly, slope.	Percs slowly, slope.
32*:						
Kipling----------	Favorable------	Unstable fill	No water--------	Percs slowly, slope.	Percs slowly, slope.	Percs slowly, slope.
Urban land.						
33----------------- Leeper	Favorable------	Unstable fill, compressible.	Deep to water	Floods, wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
34, 35, 36-------- Lucedale	Seepage---------	Compressible, piping.	No water--------	Not needed-----	Favorable------	Favorable.
37, 38------------ Lucy	Seepage---------	Seepage, piping.	No water--------	Not needed-----	Too sandy, slope.	Droughty, slope.
39----------------- Luverne	Seepage---------	Hard to pack---	No water--------	Not needed-----	Slope----------	Slope, erodes easily.
40*:						
Luverne----------	Seepage---------	Hard to pack---	No water--------	Not needed-----	Slope----------	Slope, erodes easily.
Greenville-------	Seepage---------	Favorable------	No water--------	Not needed-----	Favorable------	Slope.
41----------------- Mantachie	Seepage---------	Piping----------	No water--------	Wetness, floods.	Not needed-----	Wetness.
42----------------- Mashulaville	Favorable------	Piping----------	Deep to water	Wetness, percs slowly.	Not needed-----	Favorable.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
43, 44 Minter	Favorable	Wetness	Slow refill	Percs slowly, floods.	Not needed	Wetness, erodes easily, percs slowly.
45, 46 Oktibbeha	Favorable	Hard to pack	No water	Not needed	Percs slowly, slope.	Percs slowly, slope.
47 Pine Flat	Seepage	Seepage, piping, unstable fill.	No water	Not needed	Favorable	Favorable.
48*. Pits						
49 Quitman	Seepage	Compressible, piping, erodes easily.	No water	Wetness	Wetness	Favorable.
50 Saffell	Seepage	Seepage, piping, thin layer.	No water	Not needed	Erodes easily, slope, small stones.	Droughty, erodes easily, slope.
51 Savannah	Seepage	Low strength, piping.	Deep to water	Percs slowly, , slope.	Percs slowly, erodes easily.	Percs slowly.
52, 53 Savannah	Seepage	Low strength, piping.	Deep to water	Percs slowly, slope.	Percs slowly, erodes easily.	Percs slowly.
54*: Savannah	Seepage	Low strength, piping.	Deep to water	Percs slowly, slope.	Percs slowly, erodes easily.	Percs slowly.
Urban land.						
55, 56 Sumter	Favorable	Shrink-swell, low strength, compressible.	Deep to water	Not needed	Complex slope, depth to rock, percs slowly.	Favorable.
57*: Sumter	Favorable	Shrink-swell, low strength, compressible.	Deep to water	Not needed	Complex slope, depth to rock, percs slowly.	Favorable.
Urban land.						
58 Tadlock	Seepage	Low strength	No water	Not needed	Not needed	Favorable.
59, 60 Tadlock	Seepage	Low strength	No water	Not needed	Favorable	Favorable.
61 Troup	Seepage	Piping	No water	Not needed	Too sandy, slope.	Droughty, slope.
62*: Troup	Seepage	Piping	No water	Not needed	Too sandy, slope.	Droughty, slope.
Kipling	Favorable	Unstable fill	No water	Percs slowly, slope.	Percs slowly, slope.	Percs slowly, slope.
63*. Udifluvents						
64*. Urban land						
65, 66 Vaiden	Favorable	Low strength, shrink-swell.	No water	Percs slowly	Percs slowly, slope.	Percs slowly, slope.

See footnote at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
67, 68------------ Wickham	Seepage--------	Favorable------	Deep to water	Not needed-----	Favorable------	Favorable.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
2 Angie	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Slight.
3 Angie	Moderate: percs slowly.	Slight	Moderate: percs slowly, slope.	Slight.
4 Angie	Moderate: percs slowly, slope.	Moderate: slope.	Severe: slope.	Slight.
5 Bama	Slight	Slight	Slight	Slight.
6 Bama	Slight	Slight	Moderate: slope.	Slight.
7 Bama	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
8*:				
Bama	Slight	Slight	Moderate: slope.	Slight.
Urban land.				
9 Benndale	Slight	Slight	Slight	Slight.
10*:				
Benndale	Slight	Slight	Slight	Slight.
Urban land.				
11 Bigbee	Severe: floods, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
12*:				
Bigbee	Severe: floods, too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.
Urban land.				
13 Bonneau	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
14*:				
Bonneau	Moderate: too sandy.	Moderate: too sandy.	Moderate: slope, too sandy.	Moderate: too sandy.
Urban land.				
15 Brantley	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Slight.
16 Brantley	Moderate: percs slowly.	Slight	Moderate: percs slowly, slope.	Slight.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
17 Brantley	Moderate: percs slowly.	Slight	Severe: slope.	Slight.
18*:				
Brantley	Moderate: percs slowly, slope.	Moderate: slope.	Severe: slope.	Slight.
Lucy	Moderate: too sandy, slope.	Moderate: too sandy, slope.	Severe: slope.	Moderate: too sandy.
19 Canton Bend	Moderate: percs slowly.	Slight	Moderate: percs slowly.	Slight.
20 Canton Bend	Moderate: percs slowly.	Slight	Moderate: slope, percs slowly.	Slight.
21*:				
Canton Bend	Moderate: percs slowly.	Slight	Moderate: slope, percs slowly.	Slight.
Urban land.				
22 Congaree	Severe: floods.	Moderate: floods.	Severe: floods.	Moderate: floods.
23 Demopolis	Moderate: too clayey.	Moderate: too clayey.	Severe: depth to rock, slope.	Moderate: too clayey.
24 Demopolis	Moderate: too clayey, large stones, slope.	Moderate: too clayey, large stones, slope.	Severe: slope, depth to rock, large stones.	Moderate: too clayey, large stones.
25 Gaylesville	Severe: floods.	Moderate: wetness, too clayey, floods.	Severe: floods, wetness.	Moderate: floods, wetness.
26*:				
Gaylesville	Severe: floods.	Moderate: wetness, too clayey, floods.	Severe: floods, wetness.	Moderate: floods, wetness.
Urban land.				
27 Greenville	Slight	Slight	Severe: slope.	Slight.
28*. Gullied land				
29 Houston	Severe: percs slowly, too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
30, 31 Kipling	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: percs slowly, wetness.	Moderate: wetness.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
32*:				
Kipling	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: percs slowly, wetness.	Moderate: wetness.
Urban land.				
33 Leeper	Severe: wetness, floods, percs slowly.	Severe: too clayey, wetness, floods.	Severe: wetness, floods, percs slowly.	Severe: too clayey, floods, wetness.
34 Lucedale	Slight	Slight	Slight	Slight.
35 Lucedale	Slight	Slight	Moderate: slope.	Slight.
36 Lucedale	Slight	Slight	Severe: slope.	Slight.
37 Lucy	Moderate: too sandy.	Moderate: too sandy.	Moderate: too sandy, slope.	Moderate: too sandy.
38 Lucy	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.
39 Luverne	Moderate: percs slowly.	Slight	Severe: slope.	Slight.
40*:				
Luverne	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Greenville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
41 Mantachie	Severe: floods.	Moderate: wetness.	Severe: floods.	Moderate: wetness.
42 Mashulaville	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
43, 44 Minter	Severe: floods, wetness, percs slowly.	Severe: wetness.	Severe: wetness, floods, percs slowly.	Severe: wetness.
45, 46 Oktibbeha	Severe: percs slowly, too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
47 Pine Flat	Slight	Slight	Slight	Slight.
48*. Pits				
49 Quitman	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness.
50 Saffell	Severe: small stones.	Moderate: small stones.	Severe: slope.	Moderate: small stones.
51 Savannah	Slight	Slight	Slight	Slight.

See footnote at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
52 Savannah	Slight	Slight	Moderate: slope.	Slight.
53 Savannah	Slight	Slight	Severe: slope.	Slight.
54*:				
Savannah	Slight	Slight	Moderate: slope.	Slight.
Urban land.				
55 Sumter	Severe: too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
56 Sumter	Severe: too clayey.	Severe: too clayey.	Severe: slope, too clayey.	Severe: too clayey.
57*:				
Sumter	Severe: too clayey.	Severe: too clayey.	Severe: percs slowly, too clayey.	Severe: too clayey.
Urban land.				
58 Tadlock	Slight	Slight	Slight	Slight.
59 Tadlock	Slight	Slight	Moderate: slope.	Slight.
60 Tadlock	Slight	Slight	Severe: slope.	Slight.
61 Troup	Moderate: too sandy.	Moderate: too sandy.	Severe: slope.	Moderate: too sandy.
62*:				
Troup	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, too sandy.
Kipling	Moderate: percs slowly, wetness.	Moderate: wetness.	Severe: slope.	Moderate: wetness.
63*. Udifluvents				
64*. Urban land				
65, 66 Vaiden	Severe: too clayey, percs slowly.	Severe: too clayey.	Severe: too clayey, percs slowly.	Severe: too clayey.
67 Wickham	Slight	Slight	Slight	Slight.
68 Wickham	Slight	Slight	Moderate: slope.	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
2-----------------Angie	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
3-----------------Angie	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
4-----------------Angie	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
5-----------------Bama	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
6-----------------Bama	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
7-----------------Bama	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
8*:										
Bama---------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
9-----------------Benndale	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
10*:										
Benndale----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
11-----------------Bigbee	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
12*:										
Bigbee------------	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Poor	Very poor.
Urban land.										
13-----------------Bonneau	Poor	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
14*:										
Bonneau-----------	Poor	Fair	Good	Good	Good	Poor	Poor	Fair	Good	Poor.
Urban land.										
15, 16-------------Brantley	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
17-----------------Brantley	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
18*:										
Brantley----------	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Lucy--------------	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
19, 20: Canton Bend	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
21*:										
Canton Bend	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Urban land.										
22: Congaree	Fair	Fair	Fair	Good	Good	Poor	Fair	Fair	Good	Poor.
23: Demopolis	Poor	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
24: Demopolis	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Very poor.	Poor	Very poor.	Very poor.
25: Gaylesville	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
26*:										
Gaylesville	Poor	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Fair.
Urban land.										
27: Greenville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
28*. Gullied land										
29: Houston	Fair	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
30: Kipling	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
31: Kipling	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
32*:										
Kipling	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Urban land.										
33: Leeper	Poor	Fair	Fair	Good	Good	Poor	Fair	Fair	Good	Poor.
34, 35, 36: Lucedale	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
37, 38: Lucy	Poor	Fair	Good	Fair	Fair	Poor	Very poor.	Fair	Fair	Very poor.
39: Luverne	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
40*:										
Luverne	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Greenville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
41: Mantachie	Poor	Fair	Fair	Good	Good	Fair	Fair	Fair	Good	Fair.
42: Mashulaville	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
43: Minter	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
44: Minter	Very poor.	Poor	Very poor.	Very poor.	Very poor.	Good	Good	Poor	Poor	Good.
45: Oktibbeha	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
46: Oktibbeha	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
47: Pine Flat	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
48*. Pits										
49: Quitman	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
50: Saffell	Fair	Good	Good	Fair	Fair	Poor	Very poor.	Good	Fair	Very poor.
51, 52: Savannah	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
53: Savannah	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
54*:										
Savannah	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Very poor.
Urban land.										
55: Sumter	Fair	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
56: Sumter	Fair	Fair	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
57*:										
Sumter	Fair	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Urban land.										
58, 59: Tadlock	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
60: Tadlock	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
61: Troup	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
62*:										
Troup	Poor	Fair	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.

See footnote at end of table.

TABLE 13.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
62*:										
Kipling	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
63*. Udifluvents										
64*. Urban land										
65 Vaiden	Fair	Fair	Fair	Good	Good	Poor	Fair	Fair	Good	Poor.
66 Vaiden	Fair	Fair	Fair	Good	Good	Poor	Poor	Fair	Good	Poor.
67 Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
68 Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
2------------------ Angie	0-7	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	65-100	35-70	---	NP
	7-72	Silty clay loam, silty clay, clay.	CH, CL	A-7-6	0	95-100	90-100	85-100	75-95	41-55	18-29
3, 4--------------- Angie	0-5	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	65-100	35-70	---	NP
	5-72	Silty clay loam, silty clay, clay.	CH, CL	A-7-6	0	95-100	90-100	85-100	75-95	41-55	18-29
5, 6--------------- Bama	0-6	Fine sandy loam	SM, SC, SM-SC, CL-ML	A-2, A-4	0	95-100	85-100	70-95	30-70	<30	NP-10
	6-78	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	85-100	80-100	80-95	40-70	20-40	8-18
7------------------ Bama	0-5	Fine sandy loam	SM, SC, SM-SC, CL-ML	A-2, A-4	0	95-100	85-100	70-95	30-70	<30	NP-10
	5-72	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	85-100	80-100	80-95	40-70	20-40	8-18
8*: Bama--------------	0-6	Fine sandy loam	SM, SC, SM-SC, CL-ML	A-2, A-4	0	95-100	85-100	70-95	30-70	<30	NP-10
	6-78	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0	85-100	80-100	80-95	40-70	20-40	8-18
Urban land.											
9------------------ Benndale	0-6	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-4, A-2-4	0	100	100	60-85	30-55	<25	NP-7
	6-78	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC	A-4	0	100	100	70-95	40-75	18-22	3-7
10*: Benndale----------	0-6	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-4, A-2-4	0	100	100	60-85	30-55	<25	NP-7
	6-78	Loam, sandy loam, fine sandy loam.	ML, SM, CL-ML, SM-SC	A-4	0	100	100	70-95	40-75	18-22	3-7
Urban land.											
11----------------- Bigbee	0-8	Sand------------	SM, SP-SM	A-2-4, A-3	0	100	95-100	80-100	5-30	---	NP
	8-90	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	85-100	85-100	80-100	5-20	---	NP
12*: Bigbee------------	0-8	Sand------------	SM, SP-SM	A-2-4, A-3	0	100	95-100	80-100	5-30	---	NP
	8-90	Sand, fine sand	SP-SM, SM	A-2-4, A-3	0	85-100	85-100	80-100	5-20	---	NP
Urban land.											

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
13------------------ Bonneau	0-26	Loamy fine sand	SM	A-2	0	100	100	50-80	13-35	---	NP
	26-75	Sandy loam, sandy clay loam.	SC, SM-SC	A-2, A-6, A-4	0	100	100	60-90	30-50	21-37	4-14
14*:											
Bonneau-----------	0-26	Loamy fine sand	SM	A-2	0	100	100	50-80	13-35	---	NP
	26-75	Sandy loam, sandy clay loam.	SC, SM-SC	A-2, A-6, A-4	0	100	100	60-90	30-50	21-37	4-14
Urban land.											
15------------------ Brantley	0-8	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	95-100	36-55	<30	NP-7
	8-50	Clay, clay loam	CL, ML	A-7	0	95-100	95-100	95-100	60-75	41-50	16-22
	50-72	Fine sandy loam	SM, SC	A-2, A-4	0	95-100	95-100	95-100	30-50	<38	NP-9
16------------------ Brantley	0-6	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	95-100	36-55	<30	NP-7
	6-35	Clay, clay loam	CL, ML	A-7	0	95-100	95-100	95-100	60-75	41-50	16-22
	35-52	Sandy clay loam, clay loam.	SC, SM, CL, ML	A-4, A-6	0	95-100	95-100	95-100	36-60	30-40	7-15
	52-72	Fine sandy loam	SM, SC	A-2, A-4	0	95-100	95-100	95-100	30-50	<38	NP-9
17------------------ Brantley	0-4	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	95-100	36-55	<30	NP-7
	4-45	Clay, clay loam	CL, ML	A-7	0	95-100	95-100	95-100	60-75	41-50	16-22
	45-72	Fine sandy loam	SM, SC	A-2, A-4	0	95-100	95-100	95-100	30-50	<38	NP-9
18*:											
Brantley----------	0-9	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	95-100	36-55	<30	NP-7
	9-38	Clay, clay loam	CL, ML	A-7	0	95-100	95-100	95-100	60-75	41-50	16-22
	38-50	Sandy clay loam, clay loam.	SC, SM, CL, ML	A-4, A-6	0	95-100	95-100	95-100	36-60	30-40	7-15
	50-72	Fine sandy loam	SM, SC	A-2, A-4	0	95-100	95-100	95-100	30-50	<38	NP-9
Lucy--------------	0-22	Loamy fine sand	SM, SP-SM	A-2	0	98-100	95-100	50-87	10-30	---	NP
	22-66	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	20-40	5-20
19------------------ Canton Bend	0-7	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-2, A-4	0	95-100	95-100	70-85	30-55	<30	NP-6
	7-52	Silty clay loam, clay loam, silty clay.	CL	A-6, A-7	0	95-100	95-100	90-100	85-98	30-45	11-25
	52-80	Loam, fine sandy loam, sandy loam.	SM-SC, SM, CL-ML, ML	A-2, A-4	0	95-100	95-100	60-95	30-75	<30	NP-7

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Frag- ments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct					Pct	
20----------------- Canton Bend	0-4	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-2, A-4	0	95-100	95-100	70-85	30-55	<30	NP-6
	4-42	Silty clay loam, clay loam, silty clay.	CL	A-6, A-7	0	95-100	95-100	90-100	85-98	30-45	11-25
	42-80	Loam, fine sandy loam, sandy loam.	SM-SC, SM, CL-ML, ML	A-2, A-4	0	95-100	95-100	60-95	30-75	<30	NP-7
21*: Canton Bend-------	0-7	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-2, A-4	0	95-100	95-100	70-85	30-55	<30	NP-6
	7-52	Silty clay loam, clay loam, silty clay.	CL	A-6, A-7	0	95-100	95-100	90-100	85-98	30-45	11-25
	52-80	Loam, fine sandy loam, sandy loam.	SM-SC, SM, CL-ML, ML	A-2, A-4	0	95-100	95-100	60-95	30-75	<30	NP-7
Urban land.											
22----------------- Congaree	0-7	Loam------------	CL-ML, ML, CL	A-4	0	95-100	95-100	70-100	51-90	20-35	3-10
	7-72	Silty clay loam, fine sandy loam, loam.	SM, SC, ML, CL	A-4, A-6, A-7	0	95-100	95-100	70-100	40-90	25-50	4-22
23----------------- Demopolis	0-6	Silty clay loam	CL, ML, CL-ML	A-4, A-6, A-7	0	85-100	75-90	65-85	50-80	24-44	6-20
	6-10	Gravelly loam, gravelly clay loam, gravelly silty clay loam.	GC, GM-GC, GP-GC	A-2, A-1	0	20-30	15-25	10-20	8-15	18-38	4-14
	10-48	Weathered bedrock.	---	---	---	---	---	---	---	---	---
24----------------- Demopolis	0-5	Cobbly silty clay loam.	CL, ML	A-6	25-50	85-100	75-90	65-80	50-70	30-44	12-20
	5-12	Cobbly silty clay loam.	GC, GP-GC	A-2	15-35	30-50	20-35	15-25	10-20	20-35	7-15
	12-36	Weathered bedrock.	---	---	---	---	---	---	---	---	---
25----------------- Gaylesville	0-12	Loam------------	CL, ML	A-4, A-6, A-7	0	100	95-100	90-100	75-95	30-45	8-15
	12-68	Silty clay, clay, clay loam.	CL, ML	A-6, A-7	0	100	95-100	95-100	80-95	35-50	11-20
26*: Gaylesville-------	0-12	Loam------------	CL, ML	A-4, A-6, A-7	0	100	95-100	90-100	75-95	30-45	8-15
	12-68	Silty clay, clay, clay loam.	CL, ML	A-6, A-7	0	100	95-100	95-100	80-95	35-50	11-20
Urban land.											

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
27----------------- Greenville	0-7	Loamy fine sand	SM, SC, SM-SC, CL-ML	A-2, A-4	0	95-100	90-100	65-85	30-55	<30	NP-10
	7-72	Sandy clay loam, sandy clay, clay.	CL, SC	A-6, A-7	0	98-100	95-100	80-95	40-80	30-47	11-25
28*. Gullied land											
29----------------- Houston	0-10	Clay------------	CH, MH	A-7	0	100	100	95-100	90-95	50-68	23-37
	10-42	Clay------------	CH, MH	A-7	0	100	100	95-100	95-98	51-75	25-43
	42-72	Clay------------	CH, MH	A-7	0	100	100	95-100	95-98	55-80	30-45
30----------------- Kipling	0-5	Loam------------	CL, ML	A-6, A-4, A-7	0	100	100	90-100	70-95	20-45	3-25
	5-96	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	85-95	38-70	16-45
31----------------- Kipling	0-5	Loam------------	CL, ML	A-6, A-4, A-7	0	100	100	90-100	70-95	20-45	3-25
	5-72	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	85-95	38-70	16-45
32*: Kipling-----------	0-5	Loam------------	CL, ML	A-6, A-4, A-7	0	100	100	90-100	70-95	20-45	3-25
	5-72	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	85-95	38-70	16-45
Urban land.											
33----------------- Leeper	0-14	Silty clay------	CH, CL, MH	A-7	0	100	100	90-100	80-95	45-70	25-45
	14-90	Clay, silty clay, silty clay loam.	CH, MH	A-7	0	100	100	95-100	80-97	52-75	30-50
34----------------- Lucedale	0-7	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	80-95	25-65	<30	NP-3
	7-90	Sandy clay loam, clay loam, loam.	CL-ML, SC, CL, SM-SC	A-4, A-6, A-2	0	95-100	95-100	80-100	30-75	25-40	4-15
35, 36------------- Lucedale	0-6	Fine sandy loam	SM, ML	A-2, A-4	0	100	95-100	80-95	25-65	<30	NP-3
	6-72	Sandy clay loam, clay loam, loam.	CL-ML, SC, CL, SM-SC	A-4, A-6, A-2	0	95-100	95-100	80-100	30-75	25-40	4-15
37----------------- Lucy	0-22	Loamy fine sand	SM, SP-SM	A-2	0	98-100	95-100	50-87	10-30	---	NP
	22-73	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	20-40	5-20
38----------------- Lucy	0-24	Loamy fine sand	SM, SP-SM	A-2	0	98-100	95-100	50-87	10-30	---	NP
	24-83	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, SM	A-2, A-6, A-4	0	100	95-100	60-95	20-50	20-40	5-20

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
39----------------- Luverne	0-5	Loamy sand------	ML, SM	A-2, A-4	0-5	87-100	84-100	80-100	17-75	---	NP
	5-24	Clay loam, sandy clay, clay.	ML, MH, CH, CL	A-5, A-7	0-5	95-100	90-100	85-100	50-95	40-70	10-30
	24-32	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	32-72	Stratified loamy sand to clay.	---	---	---	---	---	---	---	---	---
40*:											
Luverne-----------	0-5	Loamy sand------	ML, SM	A-2, A-4	0-5	87-100	84-100	80-100	17-75	---	NP
	5-24	Clay loam, sandy clay, clay.	ML, MH, CH, CL	A-5, A-7	0-5	95-100	90-100	85-100	50-95	40-70	10-30
	24-32	Clay loam, sandy clay loam.	ML, MH, SM	A-4, A-5, A-7	0-5	95-100	85-100	85-100	36-76	32-56	2-14
	32-72	Stratified loamy sand to clay.	---	---	---	---	---	---	---	---	---
Greenville--------	0-7	Loamy fine sand	SM, SC, SM-SC, CL-ML	A-2, A-4	0	95-100	90-100	65-85	30-55	<30	NP-10
	7-72	Sandy clay loam, sandy clay, clay.	CL, SC	A-6, A-7	0	98-100	95-100	80-95	40-80	30-47	11-25
41----------------- Mantachie	0-14	Loam------------	CL-ML, SM-SC, SM, ML	A-4	0-5	95-100	90-100	60-97	36-60	<25	NP-5
	14-90	Loam, clay loam, sandy clay loam.	CL, SC, SM, ML	A-4, A-6	0-5	95-100	90-100	80-98	45-80	<40	NP-15
42----------------- Mashulaville	0-17	Fine sandy loam	SM, SC-SM	A-2-4, A-4	0	100	100	60-85	30-50	<25	NP-7
	17-90	Loam, clay loam, silt loam.	CL, SC	A-6, A-4	0	100	100	85-100	40-90	25-40	8-20
43----------------- Minter	0-5	Loam------------	CL, ML	A-4, A-6	0	100	100	80-100	65-95	26-40	8-18
	5-72	Clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	37-59	18-32
44----------------- Minter	0-5	Silt loam-------	CL, ML	A-4, A-6	0	100	100	80-100	65-95	26-40	8-18
	5-72	Clay loam, silty clay, clay.	CL, CH	A-6, A-7	0	100	100	90-100	75-95	37-59	18-32
45----------------- Oktibbeha	0-4	Clay------------	ML, CL	A-7, A-6	0	100	95-100	95-100	85-90	30-49	12-25
	4-43	Clay------------	CH	A-7	0	100	95-100	95-100	95-100	55-65	30-40
	43-61	Clay, silty clay	CL	A-7	0	100	95-100	95-100	90-100	41-49	25-30
46----------------- Oktibbeha	0-5	Clay------------	ML, CL	A-7, A-6	0	100	95-100	95-100	85-90	30-49	12-25
	5-43	Clay------------	CH	A-7	0	100	95-100	95-100	95-100	55-65	30-40
	43-61	Clay, silty clay	CL	A-7	0	100	95-100	95-100	90-100	41-49	25-30
47----------------- Pine Flat	0-8	Sandy loam------	SM	A-2, A-4	0	95-100	95-100	60-85	30-50	---	NP
	8-61	Fine sandy loam, sandy loam, loam.	SM, SM-SC	A-2-4, A-4	0	95-100	95-100	70-85	30-50	<25	NP-5
	61-96	Sandy clay loam, loam, sandy loam.	SM, SM-SC	A-2-4, A-4	0	95-100	95-100	75-90	30-50	<25	NP-5
48*. Pits											

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
49----------------- Quitman	0-11	Fine sandy loam	SM, ML	A-4, A-2	0	100	100	85-100	30-55	<22	NP-3
	11-30	Fine sandy loam, loam.	ML, SC, CL	A-4, A-6	0	100	100	90-100	40-70	20-35	4-15
	30-72	Sandy clay loam, loam, clay loam.	CL, SC	A-6, A-7	0	100	100	90-100	40-65	25-45	11-20
50----------------- Saffell	0-11	Gravelly fine sandy loam.	SM	A-1, A-2, A-4	0-5	70-80	50-75	40-65	20-40	<22	NP-3
	11-37	Very gravelly sandy clay loam, very gravelly fine sandy loam, very gravelly loam.	GC, SC, SM-SC, GM-GC	A-2, A-1	0-15	35-85	25-70	20-55	15-35	20-40	4-18
	37-72	Gravelly sandy loam, very gravelly sandy loam, gravelly loamy sand.	GM, GC, SM, SC	A-1, A-2, A-3	0-5	25-80	10-70	5-60	5-35	<35	NP-15
51----------------- Savannah	0-9	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	98-100	60-99	30-61	<25	NP-4
	9-29	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	100	100	80-100	40-80	23-40	7-19
	29-72	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	100	100	80-100	40-80	23-43	7-19
52----------------- Savannah	0-5	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	98-100	60-99	30-61	<25	NP-4
	5-29	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	100	100	80-100	40-80	23-40	7-19
	29-72	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	100	100	80-100	40-80	23-43	7-19
53----------------- Savannah	0-5	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	98-100	60-99	30-61	<25	NP-4
	5-24	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	100	100	80-100	40-80	23-40	7-19
	24-72	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	100	100	80-100	40-80	23-43	7-19
54*:											
Savannah----------	0-9	Fine sandy loam	SM, ML	A-2-4, A-4	0	98-100	98-100	60-99	30-61	<25	NP-4
	9-29	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	100	100	80-100	40-80	23-40	7-19
	29-72	Loam, clay loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	100	100	80-100	40-80	23-43	7-19
Urban land.											
55, 56------------- Sumter	0-6	Silty clay------	CL	A-7, A-6	0	99-100	99-100	98-100	85-90	35-50	16-25
	6-28	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	99-100	99-100	90-95	35-55	16-32
	28-60	Weathered bedrock.	CH, CL	A-7	0	100	100	99-100	75-90	41-60	16-34

See footnote at end of table.

TABLE 14.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
57*:											
Sumter------------	0-6	Silty clay------	CL	A-7, A-6	0	99-100	99-100	98-100	85-90	35-50	16-25
	6-28	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	99-100	99-100	90-95	35-55	16-32
	28-60	Weathered bedrock.	CH, CL	A-7	0	100	100	99-100	75-90	41-60	16-34
Urban land.											
58, 59, 60--------- Tadlock	0-5	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	95-100	70-95	40-70	<30	NP-7
	5-72	Clay, clay loam	CL	A-7	0	95-100	95-100	90-100	70-95	41-50	16-25
61----------------- Troup	0-61	Loamy fine sand	SM	A-2, A-4	0	100	100	65-90	15-40	---	NP
	61-96	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
62*:											
Troup-------------	0-55	Loamy fine sand	SM	A-2, A-4	0	100	100	65-90	15-40	---	NP
	55-85	Sandy clay loam, sandy loam.	SC, SM-SC, CL-ML, CL	A-4, A-2	0	95-100	95-100	70-90	24-55	19-30	4-10
Kipling-----------	0-4	Fine sandy loam	SM-SC, SM, ML, CL-ML	A-4	0	100	100	70-85	40-55	<25	NP-7
	4-65	Silty clay, clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	85-95	38-70	16-45
63*. Udifluvents											
64*. Urban land											
65----------------- Vaiden	0-4	Clay------------	MH, CH	A-7	0	100	100	95-100	70-90	50-60	20-30
	4-26	Clay------------	CH	A-7	0	100	100	95-100	85-95	50-90	30-50
	26-80	Clay------------	CH	A-7	0	100	100	95-100	85-95	50-90	30-52
66----------------- Vaiden	0-4	Clay------------	MH, CH	A-7	0	100	100	95-100	70-90	50-60	20-30
	4-28	Clay------------	CH	A-7	0	100	100	95-100	85-95	50-90	30-50
	28-60	Clay------------	CH	A-7	0	100	100	95-100	85-95	50-90	30-52
67----------------- Wickham	0-7	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	90-100	70-100	45-80	<25	NP-7
	7-43	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM-SC	A-2, A-4, A-6, A-7-6	0	95-100	90-100	75-100	30-70	20-41	5-15
	43-72	Variable--------	---	---	---	---	---	---	---	---	---
68----------------- Wickham	0-6	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	90-100	70-100	45-80	<25	NP-7
	6-42	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM-SC	A-2, A-4, A-6, A-7-6	0	95-100	90-100	75-100	30-70	20-41	5-15
	42-72	Variable--------	---	---	---	---	---	---	---	---	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T
	In	In/hr	In/in	pH			
2----------------- Angie	0-7	0.6-2.0	0.10-0.18	5.5-6.5	Low------------	0.37	3
	7-72	0.06-0.2	0.15-0.20	4.5-5.5	High-----------	0.32	
3, 4------------- Angie	0-5	0.6-2.0	0.10-0.18	5.5-6.5	Low------------	0.37	3
	5-72	0.06-0.2	0.15-0.20	4.5-5.5	High-----------	0.32	
5, 6------------- Bama	0-6	0.6-6.0	0.08-0.15	4.5-6.0	Low------------	0.24	5
	6-78	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.32	
7----------------- Bama	0-5	0.6-6.0	0.08-0.15	4.5-6.0	Low------------	0.24	5
	5-72	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.32	
8*:							
Bama-------------	0-6	0.6-6.0	0.08-0.15	4.5-6.0	Low------------	0.24	5
	6-78	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.32	
Urban land.							
9----------------- Benndale	0-6	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.20	5
	6-78	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.32	
10*:							
Benndale---------	0-6	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.20	5
	6-78	0.6-2.0	0.12-0.18	4.5-5.5	Low------------	0.32	
Urban land.							
11---------------- Bigbee	0-8	6.0-20	0.05-0.10	4.5-6.0	Low------------	0.17	5
	8-90	6.0-20	0.05-0.08	4.5-6.0	Low------------	0.17	
12*:							
Bigbee-----------	0-8	6.0-20	0.05-0.10	4.5-6.0	Low------------	0.17	5
	8-90	6.0-20	0.05-0.08	4.5-6.0	Low------------	0.17	
Urban land.							
13---------------- Bonneau	0-26	6.0-20	0.05-0.11	4.5-6.0	Low------------	0.15	5
	26-75	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.20	
14*:							
Bonneau----------	0-26	6.0-20	0.05-0.11	4.5-6.0	Low------------	0.15	5
	26-75	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.20	
Urban land.							
15---------------- Brantley	0-8	0.6-2.0	0.10-0.15	4.5-6.5	Low------------	0.28	5
	8-50	0.06-0.2	0.12-0.20	4.5-6.0	Moderate--------	0.28	
	50-72	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.20	
16---------------- Brantley	0-6	0.6-2.0	0.10-0.15	4.5-6.5	Low------------	0.28	5
	6-35	0.06-0.2	0.12-0.20	4.5-6.0	Moderate--------	0.28	
	35-52	0.6-2.0	0.12-0.20	4.5-5.5	Low------------	0.24	
	52-72	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.20	
17---------------- Brantley	0-4	0.6-2.0	0.10-0.15	4.5-6.5	Low------------	0.28	5
	4-45	0.06-0.2	0.12-0.20	4.5-6.0	Moderate--------	0.28	
	45-72	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.20	
18*:							
Brantley---------	0-9	0.6-2.0	0.10-0.15	4.5-6.5	Low------------	0.28	5
	9-38	0.06-0.2	0.12-0.20	4.5-6.0	Moderate--------	0.28	
	38-50	0.6-2.0	0.12-0.20	4.5-5.5	Low------------	0.24	
	50-72	0.6-2.0	0.10-0.15	4.5-5.5	Low------------	0.20	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
18*:							
Lucy	0-22	6.0-20	0.06-0.10	5.1-5.5	Low	0.20	5
	22-66	0.6-2.0	0.12-0.14	4.5-5.5	Low	0.20	
19 Canton Bend	0-7	0.6-2.0	0.11-0.15	5.1-6.5	Low	0.24	4
	7-52	0.06-0.2	0.14-0.18	5.1-5.5	Moderate	0.37	
	52-80	0.6-2.0	0.11-0.18	5.1-5.5	Low	0.32	
20 Canton Bend	0-4	0.6-2.0	0.11-0.15	5.1-6.5	Low	0.24	4
	4-42	0.06-0.2	0.14-0.18	5.1-5.5	Moderate	0.37	
	42-80	0.6-2.0	0.11-0.18	5.1-5.5	Low	0.32	
21*:							
Canton Bend	0-7	0.6-2.0	0.11-0.15	5.1-6.5	Low	0.24	4
	7-52	0.06-0.2	0.14-0.18	5.1-5.5	Moderate	0.37	
	52-80	0.6-2.0	0.11-0.18	5.1-5.5	Low	0.32	
Urban land.							
22 Congaree	0-7	0.6-2.0	0.12-0.20	5.1-7.3	Low	0.37	5
	7-72	0.6-2.0	0.12-0.20	5.1-7.3	Low	0.37	
23 Demopolis	0-6	0.2-0.6	0.15-0.18	7.4-8.4	Moderate	0.37	1
	6-10	0.2-0.6	0.10-0.15	7.4-8.4	Low	0.32	
	10-48	---	---	7.4-8.4	Low	---	
24 Demopolis	0-5	0.2-0.6	0.10-0.15	7.4-8.4	Moderate	0.37	1
	5-12	0.2-0.6	0.10-0.15	7.4-8.4	Moderate	0.24	
	12-36	---	---	---	---	---	
25 Gaylesville	0-12	0.06-0.6	0.16-0.19	3.6-6.0	Moderate	0.37	4
	12-68	0.06-0.2	0.14-0.19	3.6-5.5	Moderate	0.28	
26*:							
Gaylesville	0-12	0.06-0.6	0.16-0.19	3.6-6.0	Moderate	0.37	4
	12-68	0.06-0.2	0.14-0.19	3.6-5.5	Moderate	0.28	
Urban land.							
27 Greenville	0-7	0.6-6.0	0.07-0.14	4.5-5.5	Low	0.24	5
	7-72	0.6-2.0	0.14-0.18	4.5-5.5	Low	0.17	
28*. Gullied land							
29 Houston	0-10	<0.06	0.15-0.20	6.1-8.4	High	0.37	4
	10-42	<0.06	0.15-0.20	6.1-8.4	Very high	0.32	
	42-72	<0.06	0.15-0.20	6.6-8.4	Very high	0.32	
30 Kipling	0-5	0.06-0.2	0.20-0.22	3.6-6.0	Moderate	0.32	4
	5-96	0.06-0.2	0.20-0.22	3.6-8.4	Very high	0.32	
31 Kipling	0-5	0.06-0.2	0.20-0.22	3.6-6.0	Moderate	0.32	4
	5-72	0.06-0.2	0.20-0.22	3.6-8.4	Very high	0.32	
32*:							
Kipling	0-5	0.06-0.2	0.20-0.22	3.6-6.0	Moderate	0.32	4
	5-72	0.06-0.2	0.20-0.22	3.6-8.4	Very high	0.32	
Urban land.							
33 Leeper	0-14	0.06-0.2	0.18-0.22	5.6-8.4	High	0.28	5
	14-90	<0.06	0.18-0.20	5.6-8.4	High	0.28	
34 Lucedale	0-7	0.6-2.0	0.15-0.20	5.1-6.5	Low	0.24	5
	7-90	0.6-2.0	0.14-0.18	4.5-5.5	Low	0.24	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
35, 36: Lucedale	0-6	0.6-2.0	0.15-0.20	5.1-6.5	Low	0.24	5
	6-72	0.6-2.0	0.14-0.18	4.5-5.5	Low	0.24	
37: Lucy	0-22	6.0-20	0.06-0.10	5.1-5.5	Low	0.20	5
	22-73	0.6-2.0	0.12-0.14	4.5-5.5	Low	0.20	
38: Lucy	0-24	6.0-20	0.06-0.10	5.1-5.5	Low	0.20	5
	24-83	0.6-2.0	0.12-0.14	4.5-5.5	Low	0.20	
39: Luverne	0-5	2.0-6.0	0.06-0.15	4.5-5.5	Low	0.37	3
	5-24	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.28	
	24-32	0.2-0.6	0.12-0.18	3.6-5.5	Low	0.28	
	32-72	---	---	---	---	---	
40*:							
Luverne	0-5	2.0-6.0	0.06-0.15	4.5-5.5	Low	0.37	3
	5-24	0.2-0.6	0.12-0.18	3.6-5.5	Moderate	0.28	
	24-32	0.2-0.6	0.12-0.18	3.6-5.5	Low	0.28	
	32-72	---	---	---	---	---	
Greenville	0-7	0.6-6.0	0.07-0.14	4.5-5.5	Low	0.24	5
	7-72	0.6-2.0	0.14-0.18	4.5-5.5	Low	0.17	
41: Mantachie	0-14	0.6-2.0	0.16-0.20	4.5-5.5	Low	0.28	5
	14-90	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.28	
42: Mashulaville	0-17	0.6-2.0	0.12-0.15	4.5-5.5	Low	0.32	3
	17-90	0.06-.20	0.08-0.10	4.5-5.5	Low	0.28	
43, 44: Minter	0-5	0.6-2.0	0.16-0.22	4.5-5.5	Low	0.37	5
	5-72	<0.06	0.14-0.20	4.5-5.5	Moderate	0.32	
45: Oktibbeha	0-4	<0.06	0.12-0.16	4.5-6.5	Moderate	0.32	3
	4-43	<0.06	0.12-0.16	4.5-6.5	High	0.32	
	43-61	<0.06	0.10-0.14	6.6-8.4	High	0.32	
46: Oktibbeha	0-5	<0.06	0.12-0.16	4.5-6.5	Moderate	0.32	3
	5-43	<0.06	0.12-0.16	4.5-6.5	High	0.32	
	43-61	<0.06	0.10-0.14	6.6-8.4	High	0.32	
47: Pine Flat	0-8	2.0-6.0	0.10-0.15	5.1-6.5	Low	0.20	5
	8-61	2.0-6.0	0.10-0.15	5.1-6.0	Low	0.20	
	61-96	2.0-6.0	0.12-0.17	4.5-6.0	Low	0.20	
48*. Pits							
49: Quitman	0-11	0.6-2.0	0.13-0.16	4.5-5.5	Low	0.28	3
	11-30	0.6-2.0	0.15-0.20	4.5-5.5	Low	0.28	
	30-72	0.2-0.6	0.10-0.18	4.5-5.5	Low	0.28	
50: Saffell	0-11	2.0-6.0	0.05-0.10	4.5-5.5	Low	0.20	4
	11-37	0.6-2.0	0.06-0.12	4.5-5.5	Low	0.28	
	37-72	0.6-6.0	0.04-0.11	4.5-5.5	Low	0.17	
51: Savannah	0-9	0.6-2.0	0.10-0.15	4.0-5.5	Low	0.24	3
	9-29	0.6-2.0	0.13-0.20	4.0-5.5	Low	0.28	
	29-72	0.2-0.6	0.05-0.10	4.0-5.5	Low	0.24	
52: Savannah	0-5	0.6-2.0	0.10-0.15	4.0-5.5	Low	0.24	3
	5-29	0.6-2.0	0.13-0.20	4.0-5.5	Low	0.28	
	29-72	0.2-0.6	0.05-0.10	4.0-5.5	Low	0.24	
53: Savannah	0-5	0.6-2.0	0.10-0.15	4.0-5.5	Low	0.24	3
	5-24	0.6-2.0	0.13-0.20	4.0-5.5	Low	0.28	
	24-72	0.2-0.6	0.05-0.10	4.0-5.5	Low	0.24	

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors	
						K	T
	In	In/hr	In/in	pH			
54*:							
Savannah--------	0-9	0.6-2.0	0.10-0.15	4.0-5.5	Low------------	0.24	3
	9-29	0.6-2.0	0.13-0.20	4.0-5.5	Low------------	0.28	
	29-72	0.2-0.6	0.05-0.10	4.0-5.5	Low------------	0.24	
Urban land.							
55, 56-----------	0-6	0.06-2.0	0.12-0.17	7.4-8.4	High-----------	0.37	3
Sumter	6-28	0.06-2.0	0.12-0.17	7.4-8.4	High-----------	0.37	
	28-60	---	---	---	---------------	---	
57*:							
Sumter----------	0-6	0.06-2.0	0.12-0.17	7.4-8.4	High-----------	0.37	3
	6-28	0.06-2.0	0.12-0.17	7.4-8.4	High-----------	0.37	
	28-60	---	---	---	---------------	---	
Urban land.							
58, 59, 60-------	0-5	0.6-2.0	0.11-0.15	4.5-6.5	Low------------	0.24	5
Tadlock	5-72	0.6-2.0	0.14-0.18	4.5-6.5	Moderate-------	0.17	
61---------------	0-61	6.0-20	0.05-0.10	4.5-5.5	Very low-------	0.17	5
Troup	61-96	0.6-2.0	0.10-0.13	4.5-5.5	Low------------	0.20	
62*:							
Troup-----------	0-55	6.0-20	0.05-0.10	4.5-5.5	Very low-------	0.17	5
	55-85	0.6-2.0	0.10-0.13	4.5-5.5	Low------------	0.20	
Kipling---------	0-4	0.06-2.0	0.12-0.18	3.6-6.0	Very high------	0.37	4
	4-65	0.06-0.2	0.20-0.22	3.6-8.4	Very high------	0.32	
63*.							
Udifluvents							
64*.							
Urban land							
65---------------	0-4	0.06-0.2	0.10-0.15	4.5-6.5	High-----------	0.32	4
Vaiden	4-26	<0.06	0.10-0.15	4.5-6.0	Very high------	0.32	
	26-80	<0.06	0.10-0.15	4.5-7.8	Very high------	0.32	
66---------------	0-4	0.06-0.2	0.10-0.15	4.5-6.5	High-----------	0.32	4
Vaiden	4-28	<0.06	0.10-0.15	4.5-6.0	Very high------	0.32	
	28-60	<0.06	0.10-0.15	4.5-7.8	Very high------	0.32	
67---------------	0-7	2.0-6.0	0.11-0.16	4.5-6.0	Low------------	0.20	5
Wickham	7-43	0.6-2.0	0.12-0.17	4.5-6.0	Low------------	0.24	
	43-72	---	---	---	---------------	---	
68---------------	0-6	2.0-6.0	0.11-0.16	4.5-6.0	Low------------	0.20	5
Wickham	6-42	0.6-2.0	0.12-0.17	4.5-6.0	Low------------	0.24	
	42-72	---	---	---	---------------	---	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
2, 3, 4 Angie	D	None	---	---	3.0-5.0	Apparent	Jan-Mar	>60	---	High	Moderate.
5, 6, 7 Bama	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
8*:											
Bama	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Urban land.											
9 Benndale	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
10*:											
Benndale	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Urban land.											
11 Bigbee	A	Rare	Brief	Jan-Mar	3.5-6.0	Apparent	Jan-Mar	>60	---	Low	Moderate.
12*:											
Bigbee	A	Rare	Brief	Jan-Mar	3.5-6.0	Apparent	Jan-Mar	>60	---	Low	Moderate.
Urban land.											
13 Bonneau	A	None	---	---	3.5-5.0	Apparent	Dec-Mar	>60	---	Low	High.
14*:											
Bonneau	A	None	---	---	3.5-5.0	Apparent	Dec-Mar	>60	---	Low	High.
Urban land.											
15, 16, 17 Brantley	C	None	---	---	>6.0	---	---	>60	---	High	High.
18*:											
Brantley	C	None	---	---	>6.0	---	---	>60	---	High	High.
Lucy	A	None	---	---	>6.0	---	---	>60	---	Low	High.
19, 20 Canton Bend	C	Occasional	Brief	Dec-Apr	>6.0	---	---	>60	---	Moderate	Moderate.
21*:											
Canton Bend	C	Rare	Brief	Dec-Apr	>6.0	---	---	>60	---	Moderate	Moderate.
Urban land.											
22 Congaree	B	Frequent	Brief	Nov-Apr	2.5-4.0	Apparent	Nov-Apr	>60	---	Moderate	Moderate.
23 Demopolis	C	None	---	---	>6.0	---	---	4-16	Rip-pable	Moderate	Low.
24 Demopolis	D	None	---	---	>6.0	---	---	4-16	Rip-pable	Moderate	Low.
25 Gaylesville	D	Frequent	Brief	Nov-Apr	0-1.5	Apparent	Nov-Mar	>60	---	High	High.
26*:											
Gaylesville	D	Frequent	Brief	Nov-Apr	0-1.5	Apparent	Nov-Mar	>60	---	High	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
26*: Urban land.											
27: Greenville	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
28*. Gullied land											
29: Houston	D	None	---	---	4.0-6.0	Apparent	Jan-Mar	48-60	Rippable	High	Moderate.
30, 31: Kipling	D	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	High	High.
32*: Kipling	D	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	High	High.
Urban land.											
33: Leeper	D	Frequent	Brief	Jan-Mar	1.0-2.0	Apparent	Jan-Mar	>60	---	High	Low.
34, 35, 36: Lucedale	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
37, 38: Lucy	A	None	---	---	>6.0	---	---	>60	---	Low	High.
39: Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
40*: Luverne	C	None	---	---	>6.0	---	---	>60	---	High	High.
Greenville	B	None	---	---	>6.0	---	---	>60	---	Moderate	High.
41: Mantachie	C	Frequent	Brief	Jan-Mar	1.0-1.5	Apparent	Dec-Mar	>60	---	High	High.
42: Mashulaville	B/D	None	---	---	0.5-1.0	Perched	Jan-Apr	>60	---	High	Moderate.
43, 44: Minter	D	Frequent	Brief to long.	Dec-Apr	3-1.0	Apparent	Nov-Jun	>60	---	High	High.
45, 46: Oktibbeha	D	None	---	---	>6.0	---	---	30-50	Rippable	High	High.
47: Pine Flat	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
48*. Pits											
49: Quitman	C	None	---	---	1.5-2.0	Perched	Jan-Mar	>60	---	High	Moderate.
50: Saffell	B	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
51, 52, 53: Savannah	C	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
54*: Savannah	C	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	Moderate	High.
Urban land.											

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Uncoated steel	Concrete
					Ft			In			
55, 56: Sumter	C	None	---	---	>6.0	---	---	20-40	Rip-pable	Moderate	Low.
57*:											
Sumter	C	None	---	---	>6.0	---	---	20-40	Rip-pable	Moderate	Low.
Urban land.											
58, 59, 60: Tadlock	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
61: Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
62*:											
Troup	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate.
Kipling	D	None	---	---	1.5-3.0	Perched	Jan-Mar	>60	---	High	High.
63*. Udifluvents											
64*. Urban land											
65, 66: Vaiden	D	None	---	---	1.0-2.0	Apparent	Nov-Mar	>60	---	High	High.
67, 68: Wickham	B	Rare	Brief	Dec-Apr	>6.0	---	---	>60	---	Moderate	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--PHYSICAL ANALYSES OF SELECTED SOILS

[For additional information, refer to SOUTHERN COOPERATIVE SERIES No. 130--"Chemical, Mineralogical and Engineering Properties of Alabama and Mississippi Black Belt Soils" (1)]

Soil name and sample number	Depth	Horizon	Particle size distribution (Percent less than 2.0 mm)		
			Sand (2.0-0.05 mm)	Silt (0.05-0.002 mm)	Clay (<0.002 mm)
	In				
Bama:					
S70-Ala-24-10-1	0-6	Ap	68.6	27.0	4.4
S70-Ala-24-10-2	6-11	B1	50.3	31.9	17.8
S70-Ala-24-10-3	11-44	B21t	44.2	24.9	30.9
S70-Ala-24-10-4	44-78	B22t	50.0	19.7	30.3
Bonneau:					
S74-Ala-47-4-4	26-31	B21t	62.4	15.2	22.4
S74-Ala-47-4-5	31-46	B22t	53.7	17.6	28.7
Brantley:					
S70-Ala-24-4-1	0-6	Ap	55.5	26.5	18.0
S70-Ala-24-4-2	6-20	B21t	35.3	23.0	41.7
S70-Ala-24-4-5	52-72	C	64.8	20.2	15.0
Canton Bend:					
S73-Ala-24-1-1	0-7	Ap	59.5	33.9	6.6
S73-Ala-24-1-2	7-18	B21t	14.1	51.7	34.2
S73-Ala-24-1-3	18-33	B22t	9.4	53.6	37.0
S73-Ala-24-1-4	33-52	B23t	31.3	40.9	27.8
S73-Ala-24-1-5	52-62	B3	36.4	41.1	22.5
Gaylesville:					
S74-Ala-47-2-2	6-12	B1	34.1	42.7	23.2
S74-Ala-47-2-3	12-27	B21t	19.6	36.1	44.3
Greenville:					
S70-Ala-24-8-1	0-7	Ap	79.0	16.0	5.0
S70-Ala-24-8-2	7-26	B21t	42.7	15.7	41.6
S70-Ala-24-8-4	45-72	B23t	54.1	7.9	38.0
Luverne:					
S70-Ala-24-9-1	0-5	Ap	82.1	10.6	7.3
S70-Ala-24-9-2	5-17	B21t	27.3	15.0	57.7
S70-Ala-24-9-5	32-72	C	68.4	7.0	24.6
Minter:					
S70-Ala-24-15-1	0-5	Ap	34.6	45.1	20.3
S70-Ala-24-15-3	14-31	B22tg	22.1	34.7	43.2
S70-Ala-24-15-5	44-72	B24tg	20.2	40.7	37.0
Savannah:					
S70-Ala-24-12-1	0-5	Ap	43.9	50.3	5.8
S70-Ala-24-12-3	8-22	B21	34.2	40.7	25.1
S70-Ala-24-12-6	56-72	Bx2	45.5	25.5	29.0
Tadlock:					
S70-Ala-24-7-1	0-5	Ap	64.8	20.2	15.0
S70-Ala-24-7-2	5-23	B21t	33.3	22.1	44.6
S70-Ala-24-7-4	63-72	B23t	39.1	20.4	40.5
Wickham:					
S70-Ala-24-13-1	0-7	Ap	73.5	19.6	6.9
S70-Ala-24-13-3	12-21	B21t	46.6	23.7	29.7
S70-Ala-24-13-4	21-35	B22t	54.3	19.6	26.1
S70-Ala-24-13-6	43-59	C1	81.0	9.9	9.1

TABLE 18.--CHEMICAL ANALYSES OF SELECTED SOILS

[For additional information, refer to SOUTHERN COOPERATIVE SERIES No. 130--"Chemical, Mineralogical, and Engineering Properties of Alabama and Mississippi Black Belt Soils" (1)]

Soil name and sample number	Depth	Horizon	Extractable bases (Meq/100 g of soil) Ca	Mg	K	Base saturation	Reaction (1:1 soil:water)
	In					Pct	pH
Bama:							
S70-Ala-24-10-1	0-6	Ap	1.46	0.32	0.01	47	5.6
S70-Ala-24-10-2	6-11	B1	2.56	0.26	0.01	55	6.1
S70-Ala-24-10-3	11-44	B21t	3.40	0.55	0.01	56	6.2
S70-Ala-24-10-4	44-78	B22t	0.36	0.27	0.04	13	5.2
Bonneau:							
S74-Ala-47-4-4	26-31	B21t	1.91	1.38	0.10	40	5.2
S74-Ala-47-4-5	31-46	B22t	2.43	1.85	0.14	38	5.1
S74-Ala-47-4-7	65-75	B3	0.70	0.76	0.08	16	4.7
Brantley:							
S70-Ala-24-4-1	0-6	Ap	8.20	3.34	0.71	94	6.0
S70-Ala-24-4-2	6-20	B21t	17.40	5.70	0.35	82	5.6
S70-Ala-24-4-5	52-72	C	4.40	3.54	0.47	39	4.5
Canton Bend:							
S73-Ala-24-1-1	0-7	Ap	1.88	0.44	0.24	56	5.4
S73-Ala-24-1-2	7-18	B21t	3.10	1.21	0.12	51	5.2
S73-Ala-24-1-3	18-33	B22t	2.80	3.19	0.07	58	5.2
S73-Ala-24-1-4	33-52	B23t	1.40	3.36	0.09	55	5.3
S73-Ala-24-1-5	52-62	B3	0.76	2.54	0.08	45	5.1
Greenville:							
S70-Ala-24-8-1	0-7	Ap	0.81	0.26	0.19	50	5.4
S70-Ala-24-8-2	7-26	B21t	4.52	2.03	0.14	61	5.2
S70-Ala-24-8-4	45-72	B23t	0.28	0.59	0.13	15	5.0
Luverne:							
S70-Ala-24-9-1	0-5	Ap	0.99	0.52	0.16	55	5.0
S70-Ala-24-9-2	5-17	B21t	10.80	6.30	0.46	70	4.9
S70-Ala-24-9-5	32-72	C	0.74	1.24	0.32	--	4.7
Minter:							
S70-Ala-24-15-1	0-5	Ap	6.48	1.18	0.24	66	4.9
S70-Ala-24-15-3	14-31	B22tg	4.32	2.95	0.20	37	4.6
S70-Ala-24-15-5	44-72	B24tg	13.20	5.57	0.18	48	4.9
Savannah:							
S70-Ala-24-12-1	0-5	Ap	2.36	0.46	0.49	59	5.5
S70-Ala-24-12-3	8-22	B21	1.52	1.38	0.16	35	4.6
S70-Ala-24-12-6	56-72	Bx2	.24	0.59	0.18	12	4.6
Tadlock:							
S70-Ala-24-7-1	0-5	Ap	3.52	0.79	0.41	64	5.8
S70-Ala-24-7-2	5-23	B21t	11.60	1.11	0.18	75	5.9
S70-Ala-24-7-4	63-72	B23t	10.80	1.70	0.35	81	6.1
Wickham:							
S70-Ala-24-13-1	0-7	Ap	1.08	0.33	0.31	53	5.4
S70-Ala-24-13-3	12-21	B21t	3.24	1.05	0.27	60	4.6
S70-Ala-24-13-4	21-35	B22t	1.70	1.05	0.17	31	4.5
S70-Ala-24-13-6	43-59	C1	0.28	0.59	0.12	27	4.6

TABLE 19.--ENGINEERING TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon, and depth in inches	Classification: AASHTO	Classification: Unified	Percentage passing sieve: 3/8 inch	No. 4	No. 10	No. 40	No. 200	Percentage smaller than--: .02 mm	.005 mm	.002 mm	Liquid limit	Plasticity index	Moisture density: Max. dry density	Optimum moisture
											Pct		Lb/Ft3	Pct
Bigbee sand:[1] (S70AL-024-003)														
Ap------- 0 to 6	A-3(0)	SP-SM	100	100	100	84	9	--	5	--	--	NP	106	17
C2-------12 to 44	A-3(0)	SP-SM	100	100	100	83	6	--	4	--	--	NP	102	15
C4-------75 to 90	A-3(0)	SP	100	100	100	77	2	--	1	--	--	NP	97	19
Bigbee sand:[2] (S74AL-047-001)														
Ap------- 0 to 8	A-3(0)	SP-SM	100	100	100	99	9	--	5	--	--	NP	102	13
C1------- 8 to 36	A-3(0)	SP-SM	100	100	100	99	9	--	5	--	--	NP	102	13
C4-------70 to 90	A-3(0)	SP-SM	100	100	100	99	6	--	4	--	--	NP	100	14
Brantley fine sandy loam:[2] (S73AL-024-004)														
Ap------- 0 to 6	A-4(0)	SM	100	99	99	98	42	--	24	--	19	2	118	12
B21t----- 6 to 20	A-7-6(12)	CL	100	100	99	99	66	--	55	--	46	19	102	20
C---------52 to 72	A-2-4(0)	SM	100	99	99	98	34	--	31	--	34	6	102	18
Houston clay:[2] (S70AL-024-028)														
Ap------- 0 to 10	A-7-5(36)	MH	100	100	100	99	95	--	76	--	66	30	91	23
AC-------25 to 42	A-7-5(35)	MH	100	100	100	99	97	--	82	--	70	26	93	25
C2-------58 to 72	A-7-5(45)	CH	100	100	100	97	95	--	83	--	73	39	94	24
Kipling loam:[2] (S70AL-024-011)														
Ap------- 0 to 5	A-4(2)	ML	100	100	99	99	81	--	31	--	28	3	107	15
B22t-----12 to 25	A-6(14)	CL	100	100	100	100	86	--	46	--	39	16	107	16
C1-------43 to 81	A-7-6(24)	CL	100	100	100	100	88	--	54	--	48	26	108	17
Leeper silty clay:[2] (S70AL-024-016)														
Ap------- 0 to 8	A-7-5(31)	MH	100	100	100	99	95	--	70	--	58	27	97	22
B2-------14 to 60	A-7-5(46)	MH	100	100	100	99	97	--	84	--	74	38	90	25
C---------60 to 90	A-7-5(38)	MH	100	100	100	97	93	--	77	--	67	34	95	24
Luverne loamy sand:[2] (S70AL-024-009)														
Ap------- 0 to 5	A-2-4(0)	SM	100	98	96	94	17	--	8	--	--	NP	109	12
B21t----- 5 to 17	A-7-5(20)	MH	100	100	100	99	71	--	66	--	57	27	94	23
C---------32 to 72	A-4(0)	SM	100	99	98	97	37	--	28	--	--	NP	107	17
Mantachie loam:[2] (S70AL-024-017)														
Ap------- 0 to 7	A-4(0)	SM	100	100	100	97	38	--	17	--	--	NP	115	12
C1g------14 to 63	A-4(1)	ML	100	100	100	98	67	--	36	--	26	4	109	15
C2g------63 to 90	A-4(0)	SM	100	100	100	98	48	--	27	--	20	2	120	12

See footnotes at end of table.

TABLE 19.--ENGINEERING TEST DATA--Continued

Soil name, report number, horizon, and depth in inches	Classification		Grain size distribution								Liquid limit	Plasticity index	Moisture density	
			Percentage passing sieve					Percentage smaller than--						
	AASHTO	Unified	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			Max. dry density	Optimum moisture
											Pct		Lb/Ft3	Pct
Savannah fine sandy loam:[3] (S70AL-024-012)														
Ap-------- 0 to 5	A-4 (00)	ML	100	99	99	99	61	--	17	--	--	NP	110	12
B21t------ 8 to 22	A-4 (06)	CL	100	100	100	99	75	--	43	--	30	10	112	14
Bx2------56 to 72	A-6 (08)	CL	100	100	100	99	71	--	41	--	36	12	106	17

[1]Bigbee sand: 2.75 miles southeast of Beech Creek at Selma on River Road, 0.2 mile south of road, SE1/4NW1/4 sec. 10, T. 16 N., R. 11 E.

[2]Refer to the section "Soil series and morphology" for a description of the location of the pedon.

[3]Savannah fine sandy loam: 6 miles southeast of Five Points, NE1/4NW1/4SE1/4 sec. 10, T. 14 N., R. 9 E.

TABLE 20.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Angie	Clayey, mixed, thermic Aquic Paleudults
Bama	Fine-loamy, siliceous, thermic Typic Paleudults
Benndale	Coarse-loamy, siliceous, thermic Typic Paleudults
Bigbee	Thermic, coated Typic Quartzipsamments
Bonneau	Loamy, siliceous, thermic Arenic Paleudults
Brantley	Fine, mixed, thermic Ultic Hapludalfs
Canton Bend	Fine, mixed, thermic Ultic Hapludalfs
Congaree	Fine-loamy, mixed, nonacid, thermic Typic Udifluvents
Demopolis	Loamy-skeletal, carbonatic, thermic, shallow Typic Udorthents
Gaylesville	Fine, mixed, thermic Aeric Ochraqualfs
Greenville	Clayey, kaolinitic, thermic Rhodic Paleudults
Houston	Very-fine, montmorillonitic, thermic Typic Chromuderts
Kipling	Fine, montmorillonitic, thermic Vertic Hapludalfs
Leeper	Fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Lucedale	Fine-loamy, siliceous, thermic Rhodic Paleudults
Lucy	Loamy, siliceous, thermic Arenic Paleudults
Luverne	Clayey, mixed, thermic Typic Hapludults
Mantachie	Fine-loamy, siliceous, acid, thermic Aeric Fluvaquents
Mashulaville	Coarse-loamy, siliceous, thermic Typic Fragiaquults
Minter	Fine, mixed, thermic Typic Ochraqualfs
Oktibbeha	Very-fine, montmorillonitic, thermic Vertic Hapludalfs
Pine Flat	Coarse-loamy, siliceous, thermic Rhodic Paleudults
Quitman	Fine-loamy, siliceous, thermic Aquic Paleudults
Saffell	Loamy-skeletal, siliceous, thermic Typic Hapludults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Sumter	Fine-silty, carbonatic, thermic Rendollic Eutrochrepts
Tadlock	Fine, mixed, thermic Rhodic Paleudalfs
Troup	Loamy, siliceous, thermic Grossarenic Paleudults
Udifluvents	Udifluvents
Vaiden	Very-fine, montmorillonitic, thermic Vertic Hapludalfs
Wickham	Fine-loamy, mixed, thermic Typic Hapludults

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LEGEND

1 — LUVERNE-GREENVILLE: Deep, sloping to steep, well drained soils that have a clayey subsoil; formed in marine sediments of the Coastal Plain

2 — BRANTLEY-TADLOCK: Deep, nearly level to moderately steep, well drained soils that have a clayey subsoil; formed in marine sediments of the Coastal Plain

3 — SUMTER-HOUSTON-VAIDEN: Moderately deep and deep, nearly level to strongly sloping, well drained to somewhat poorly drained soils that have a clayey subsoil; formed in marine sediments of the Blackland Prairie

4 — SAVANNAH-MASHULAVILLE-QUITMAN: Deep, nearly level to sloping, moderately well drained to poorly drained soils that have a loamy subsoil; formed in marine and old stream sediments of the Coastal Plain

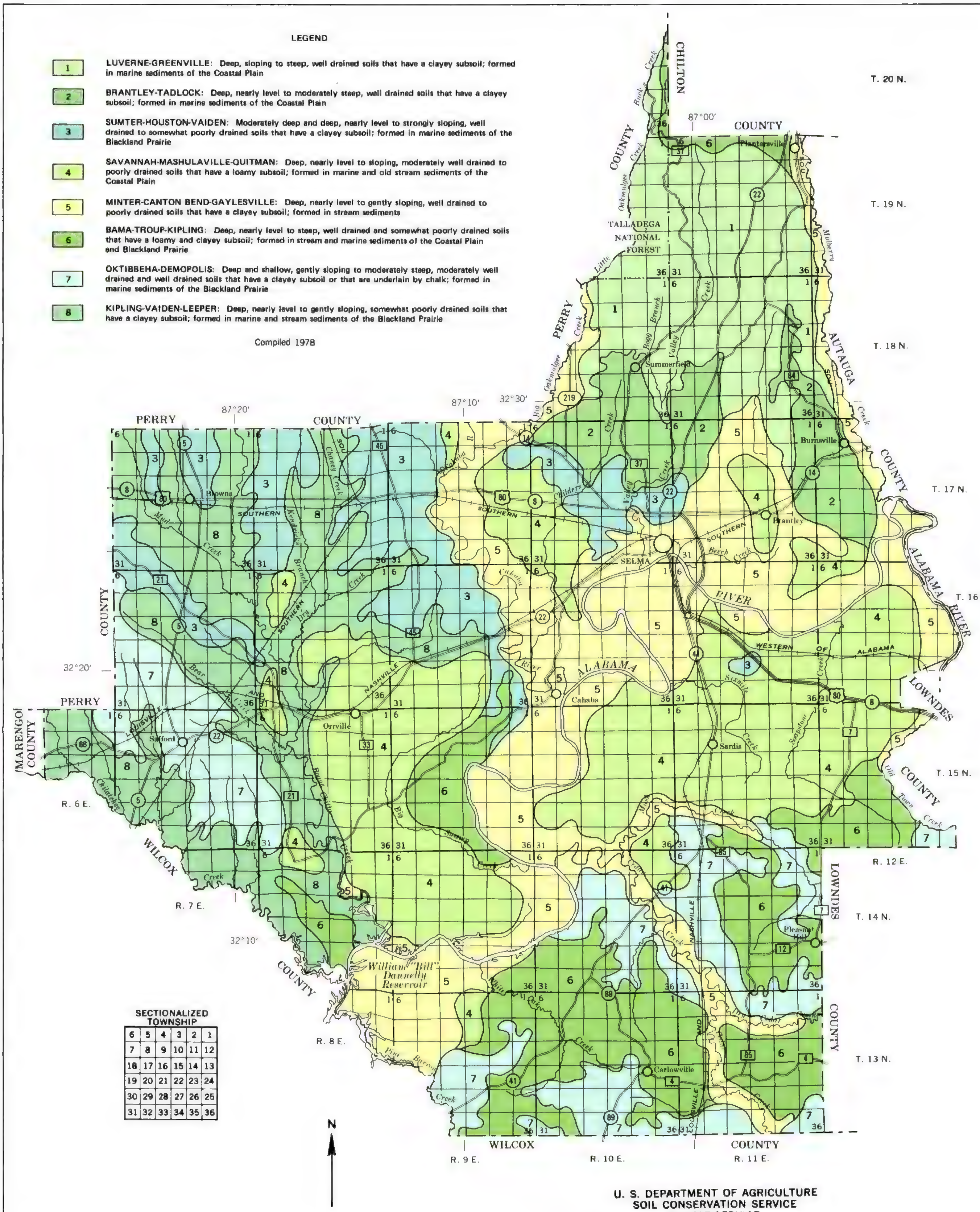
5 — MINTER-CANTON BEND-GAYLESVILLE: Deep, nearly level to gently sloping, well drained to poorly drained soils that have a clayey subsoil; formed in stream sediments

6 — BAMA-TROUP-KIPLING: Deep, nearly level to steep, well drained and somewhat poorly drained soils that have a loamy and clayey subsoil; formed in stream and marine sediments of the Coastal Plain and Blackland Prairie

7 — OKTIBBEHA-DEMOPOLIS: Deep and shallow, gently sloping to moderately steep, moderately well drained and well drained soils that have a clayey subsoil or that are underlain by chalk; formed in marine sediments of the Blackland Prairie

8 — KIPLING-VAIDEN-LEEPER: Deep, nearly level to gently sloping, somewhat poorly drained soils that have a clayey subsoil; formed in marine and stream sediments of the Blackland Prairie

Compiled 1978



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FOREST SERVICE
ALABAMA AGRICULTURAL EXPERIMENT STATION
ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES

GENERAL SOIL MAP

DALLAS COUNTY, ALABAMA

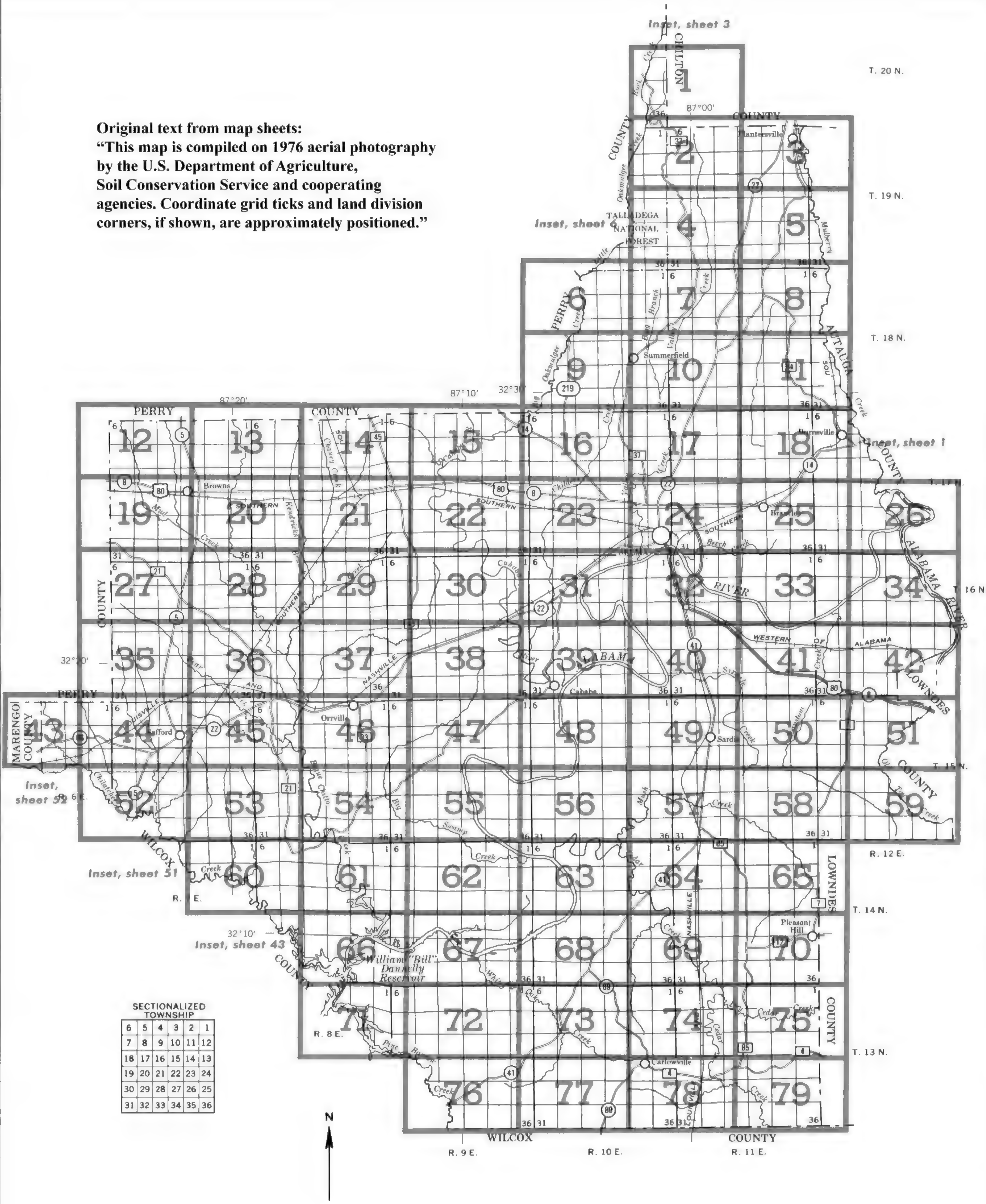
Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

Original text from map sheets:
"This map is compiled on 1976 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned."



INDEX TO MAP SHEETS

DALLAS COUNTY, ALABAMA

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km

SOIL LEGEND

SYMBOL	NAME
2	Angie fine sandy loam, 0 to 2 percent slopes
3	Angie fine sandy loam, 2 to 5 percent slopes
4	Angie fine sandy loam, 5 to 12 percent slopes
5	Bama fine sandy loam, 0 to 2 percent slopes
6	Bama fine sandy loam, 2 to 5 percent slopes
7	Bama fine sandy loam, 5 to 12 percent slopes
8	Bama-Urban land complex, 0 to 8 percent slopes
9	Benndale fine sandy loam, 0 to 3 percent slopes
10	Benndale-Urban land complex, 0 to 3 percent slopes
11	Bigbee sand, 0 to 5 percent slopes
12	Bigbee-Urban land complex, 0 to 5 percent slopes
13	Bonneau loamy fine sand, 0 to 5 percent slopes
14	Bonneau-Urban land complex, 0 to 5 percent slopes
15	Brantley fine sandy loam, 0 to 2 percent slopes
16	Brantley fine sandy loam, 2 to 5 percent slopes
17	Brantley fine sandy loam, 5 to 10 percent slopes
18	Brantley-Lucy association, hilly
19	Canton Bend fine sandy loam, 0 to 2 percent slopes
20	Canton Bend fine sandy loam, 2 to 5 percent slopes
21	Canton Bend-Urban land complex, 0 to 5 percent slopes
22	Congaree loam, 0 to 4 percent slopes
23	Demopolis silty clay loam, 3 to 12 percent slopes
24	Demopolis cobbly silty clay loam, 5 to 15 percent slopes
25	Gaylesville loam
26	Gaylesville-Urban land complex
27	Greenville loamy fine sand, 5 to 10 percent slopes
28	Gullied land
29	Houston clay, 1 to 5 percent slopes
30	Kipling loam, 0 to 1 percent slopes
31	Kipling loam, 1 to 5 percent slopes
32	Kipling-Urban land complex, 0 to 5 percent slopes
33	Leeper silty clay
34	Lucedale fine sandy loam, 0 to 2 percent slopes
35	Lucedale fine sandy loam, 2 to 5 percent slopes
36	Lucedale fine sandy loam, 5 to 8 percent slopes
37	Lucy loamy fine sand, 0 to 5 percent slopes
38	Lucy loamy fine sand, 5 to 10 percent slopes
39	Luverne loamy sand, 4 to 10 percent slopes
40	Luverne-Greenville association, hilly
41	Mantachie loam
42	Mashulaville fine sandy loam
43	Minter loam
44	Minter silt loam, ponded
45	Oktibbeha clay, 1 to 5 percent slopes
46	Oktibbeha clay, 5 to 12 percent slopes
47	Pine Flat sandy loam, 0 to 3 percent slopes
48	Pits
49	Quitman fine sandy loam
50	Saffell gravelly fine sandy loam, 4 to 12 percent slopes
51	Savannah fine sandy loam, 0 to 2 percent slopes
52	Savannah fine sandy loam, 2 to 5 percent slopes
53	Savannah fine sandy loam, 5 to 8 percent slopes
54	Savannah-Urban land complex, 1 to 8 percent slopes
55	Sumter silty clay, 1 to 5 percent slopes
56	Sumter silty clay, 5 to 12 percent slopes
57	Sumter-Urban land complex, 1 to 8 percent slopes
58	Tadlock fine sandy loam, 0 to 2 percent slopes
59	Tadlock fine sandy loam, 2 to 5 percent slopes
60	Tadlock fine sandy loam, 5 to 10 percent slopes
61	Troup loamy fine sand, 4 to 10 percent slopes
62	Troup-Kipling association, hilly
63	Udifluvents, 4 to 25 percent slopes, channeled
64	Urban land
65	Vaiden clay, 0 to 1 percent slopes
66	Vaiden clay, 1 to 5 percent slopes
67	Wickham fine sandy loam, 0 to 2 percent slopes
68	Wickham fine sandy loam, 2 to 5 percent slopes

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool (Davis Airstrip; FLOOD POOL LINE)

STATE COORDINATE TICK

LAND DIVISION CORNERS
(sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEMS & DESIGNATIONS

- Interstate
- Federal
- State
- County, farm or ranch

RAILROAD

POWER TRANSMISSION LINE
(normally not shown)

PIPE LINE
(normally not shown)

FENCE
(normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small (water)

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label) (Indian Mound)
- Located object (label) (Tower)
- Tank (label) (GAS)
- Wells, oil or gas
- Windmill
- Kitchen midden

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) (CANAL)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial (water)
- Intermittent

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS
(CeA; FoB2)

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

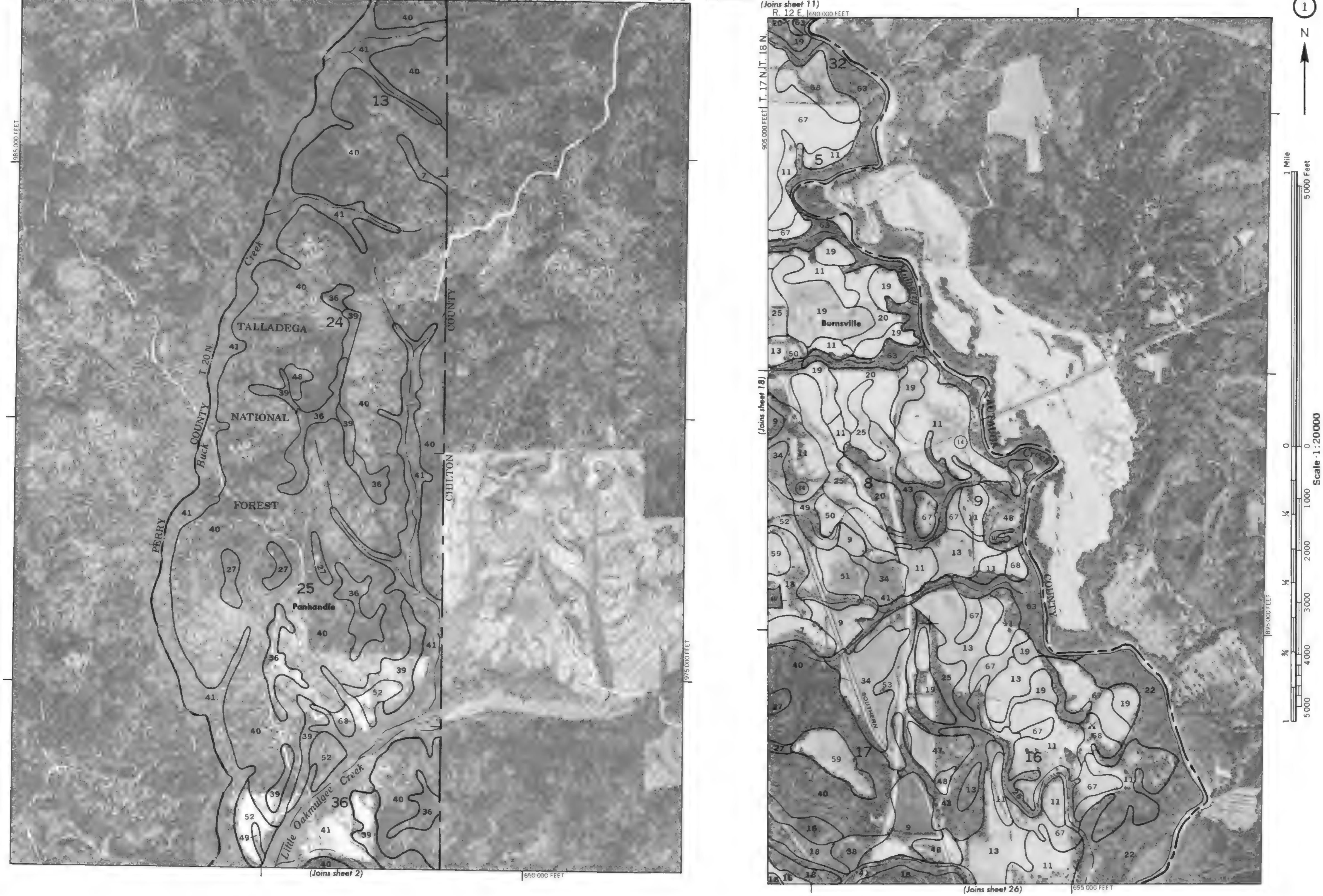
DEPRESSION OR SINK

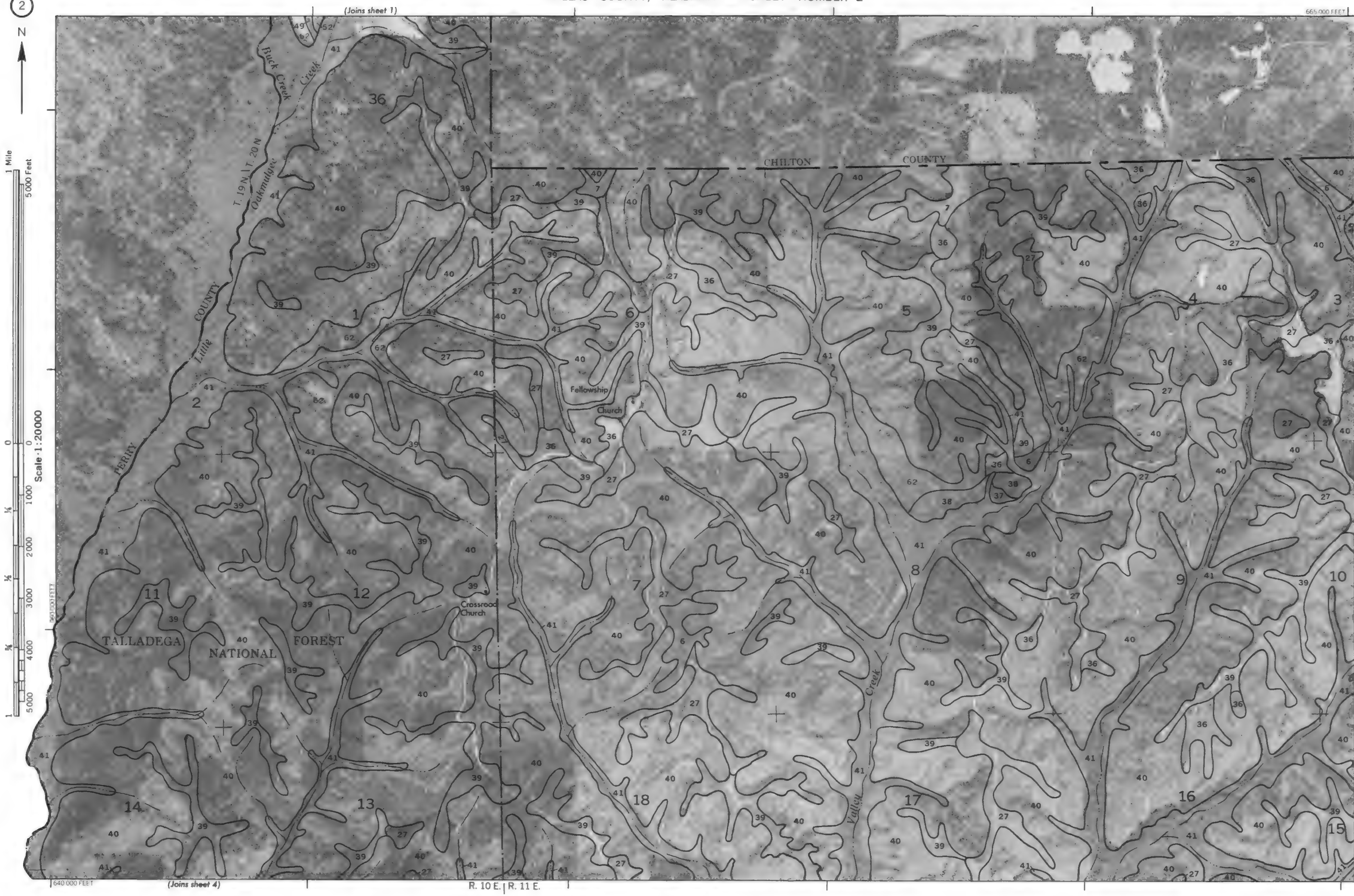
SOIL SAMPLE SITE
(normally not shown)

MISCELLANEOUS

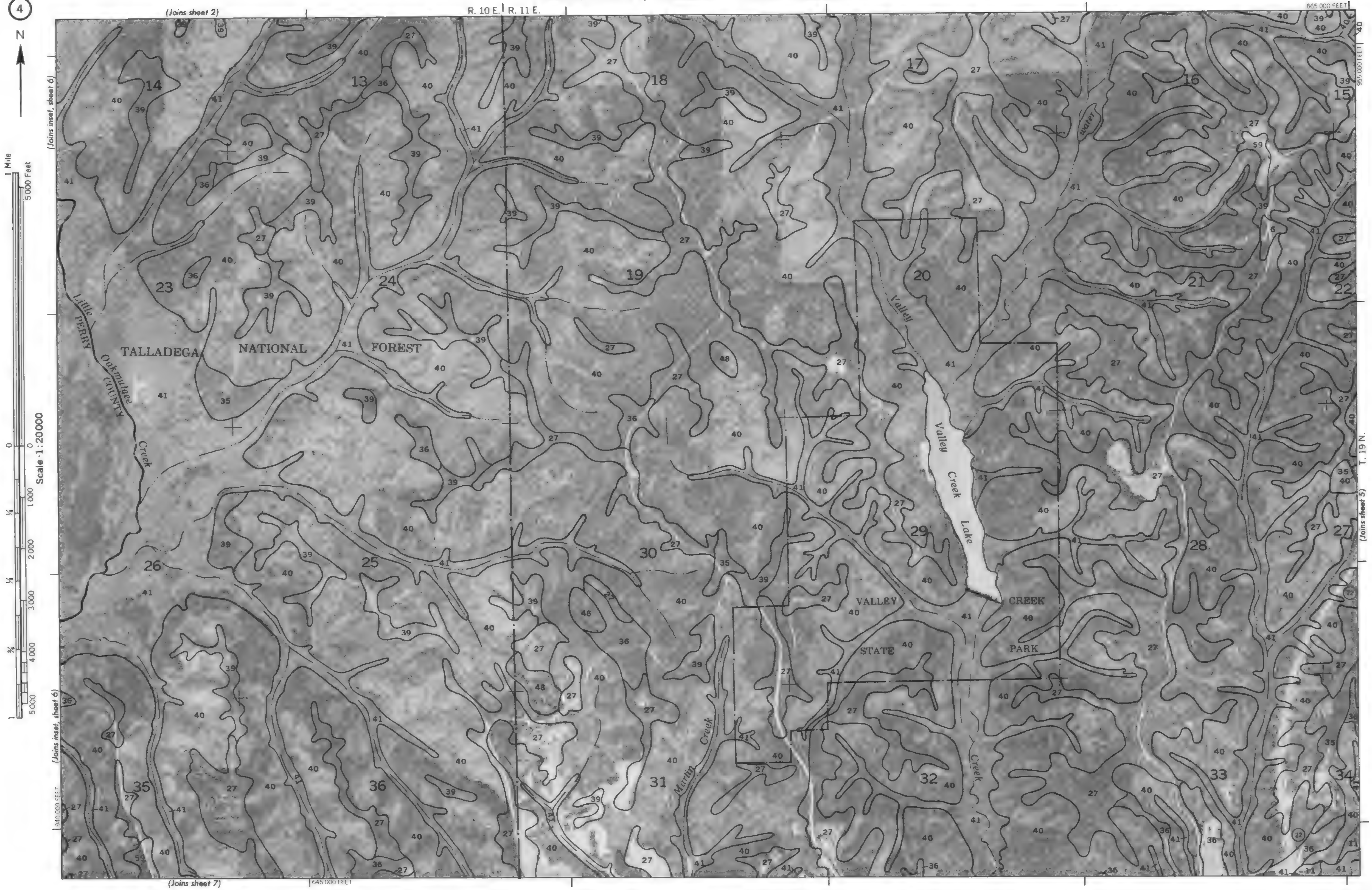
- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

DALLAS COUNTY, ALABAMA — SHEET NUMBER 1

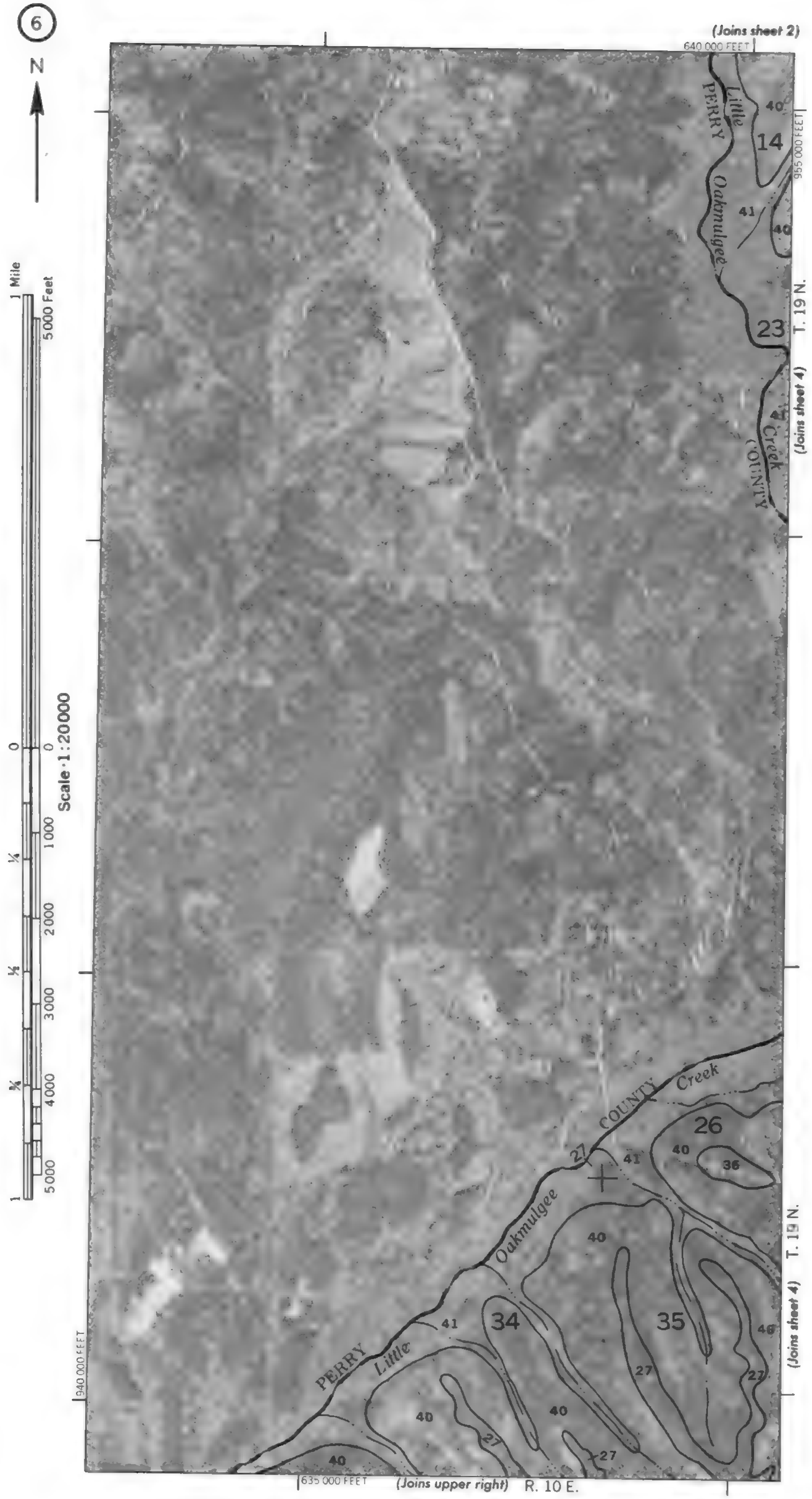



2
N
(Joins sheet 1)
665 000 FEET
970 000 FEET
(Joins sheet 3)
(Joins sheet 4)
640 000 FEET
R. 10 E. | R. 11 E.
T. 19 N. | T. 20 N.
CHILTON COUNTY
PERRY COUNTY
Little Oakmulgee Creek
Buck Creek
Valley Creek
Fellowship Church
Crossroad Church
TALLADEGA NATIONAL FOREST
Scale 1:20000
1 Mile
5000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾
1

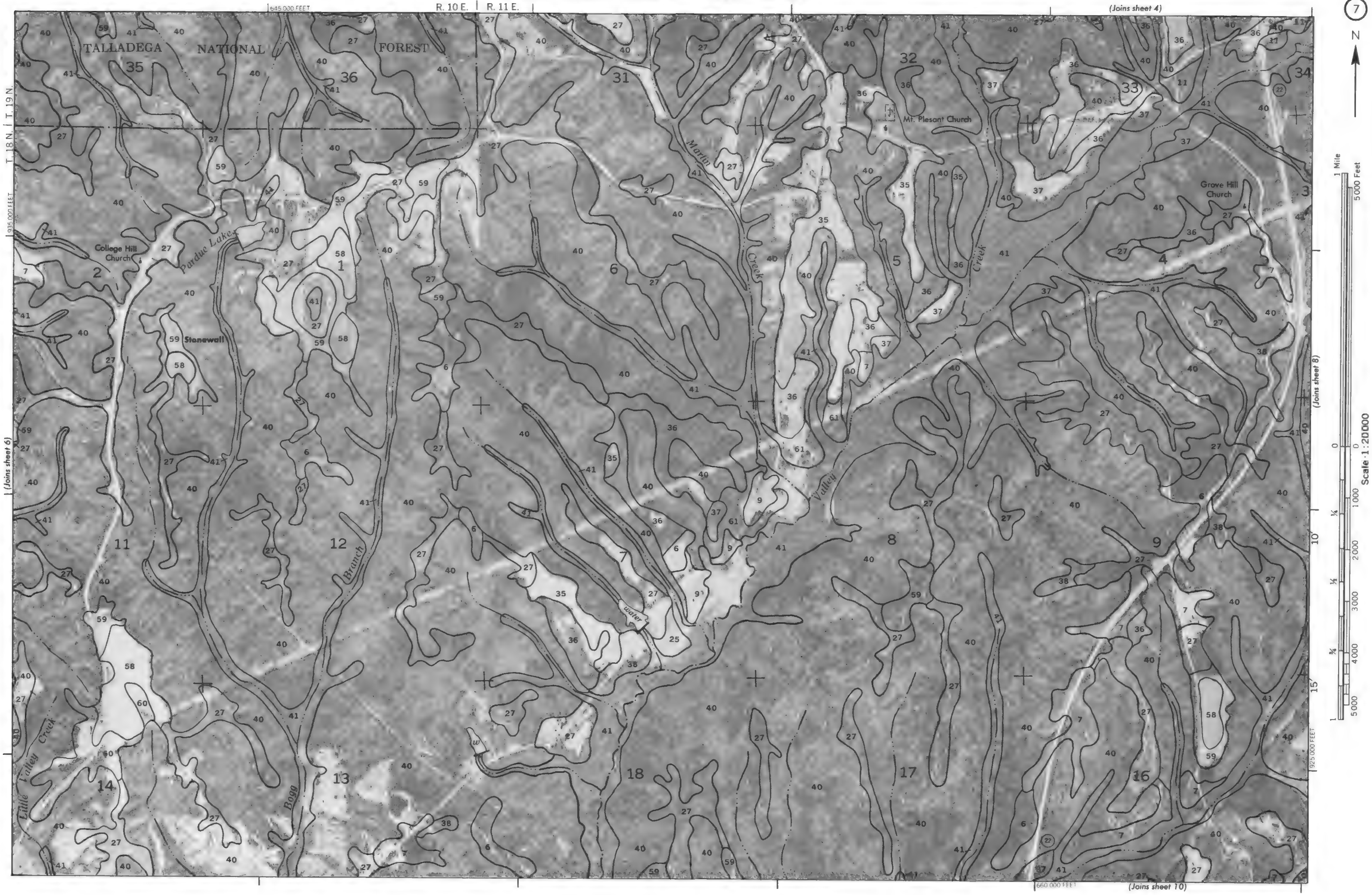

3
N
665 000 FEET
970 000 FEET
CHILTON COUNTY
Harris Branch
water
Plantersville
Plantersville Grove Church
Mulberry
AUTAUGA
Creek
COUNTY
SOUTHERN
T. 19 N.
(Joins sheet 2)
(Joins sheet 5)
R. 11 E.
R. 12 E.
685 000 FEET
960 000 FEET
645 000 FEET
993 000 FEET
990 000 FEET
650 000 FEET
PERRY COUNTY
Buck Creek
CHILTON COUNTY
T. 20 N.
R. 10 E. (Joins sheet 1)
3000 AND 5000-FOOT GRID TICKS
1 Mile
5000 Feet
Scale 1:20000

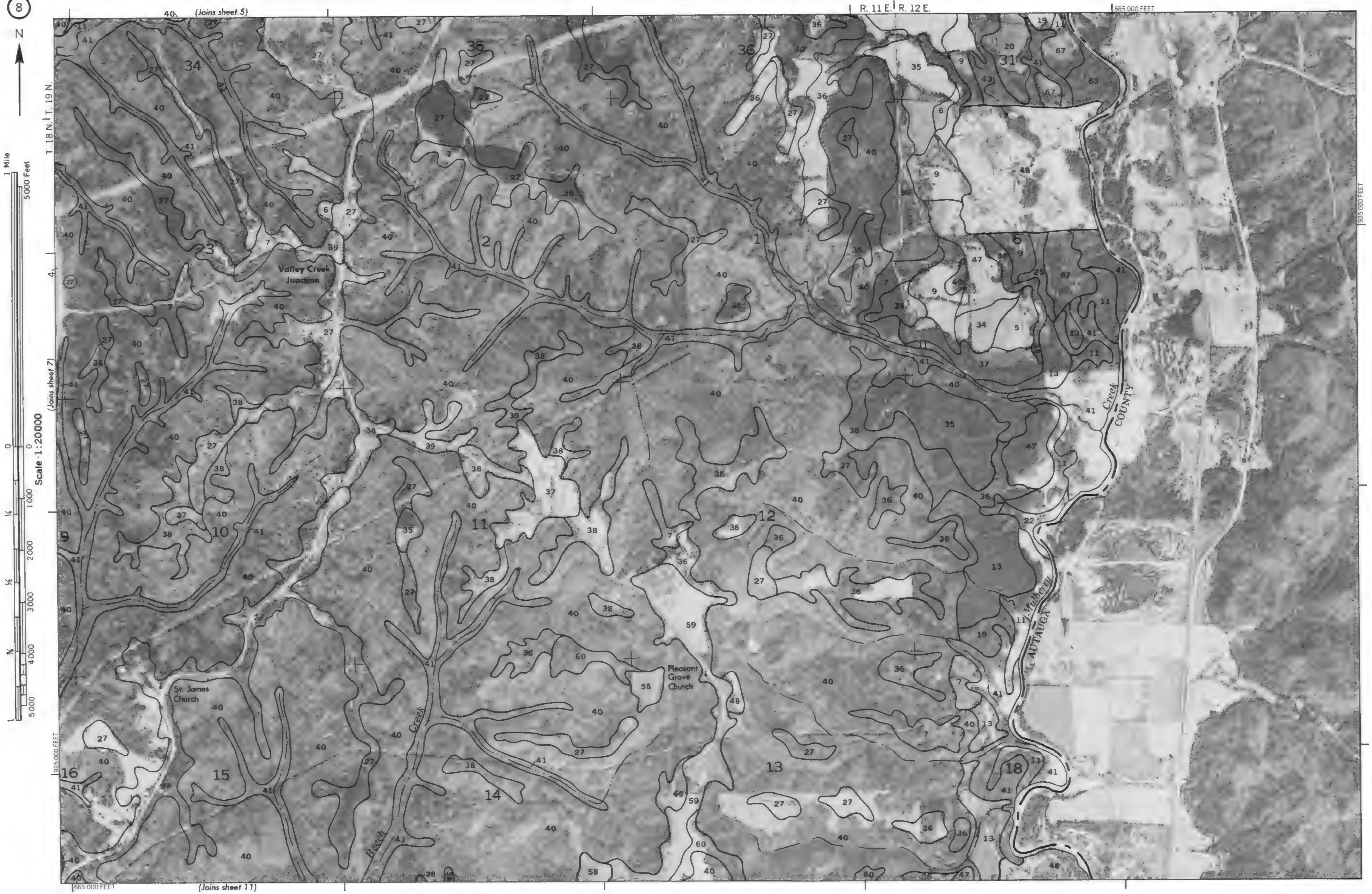

4
N
(Joins sheet 2)
R. 10 E. | R. 11 E.
665 000 FEET
955 000 FEET
(Joins inset, sheet 6)
(Joins sheet 5)
(Joins sheet 7)
645 000 FEET
940 000 FEET
T. 19 N.
1 Mile
5000 Feet
Scale 1:20000
TALLADEGA NATIONAL FOREST
Little
PERRY COUNTY
Oakmulgee Creek
Valley
Valley Creek Lake
Water
VALLEY CREEK STATE PARK
Martin Creek
Creek

DALLAS COUNTY, ALABAMA — SHEET NUMBER 5


6
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 2)
640 000 FEET
Little
Oakmulgee
PERRY
Creek
COUNTY
14
23
T. 19 N.
(Joins sheet 4)
26
36
34
35
T. 19 N.
(Joins sheet 4)
940 000 FEET
635 000 FEET
(Joins upper right)
R. 10 E.

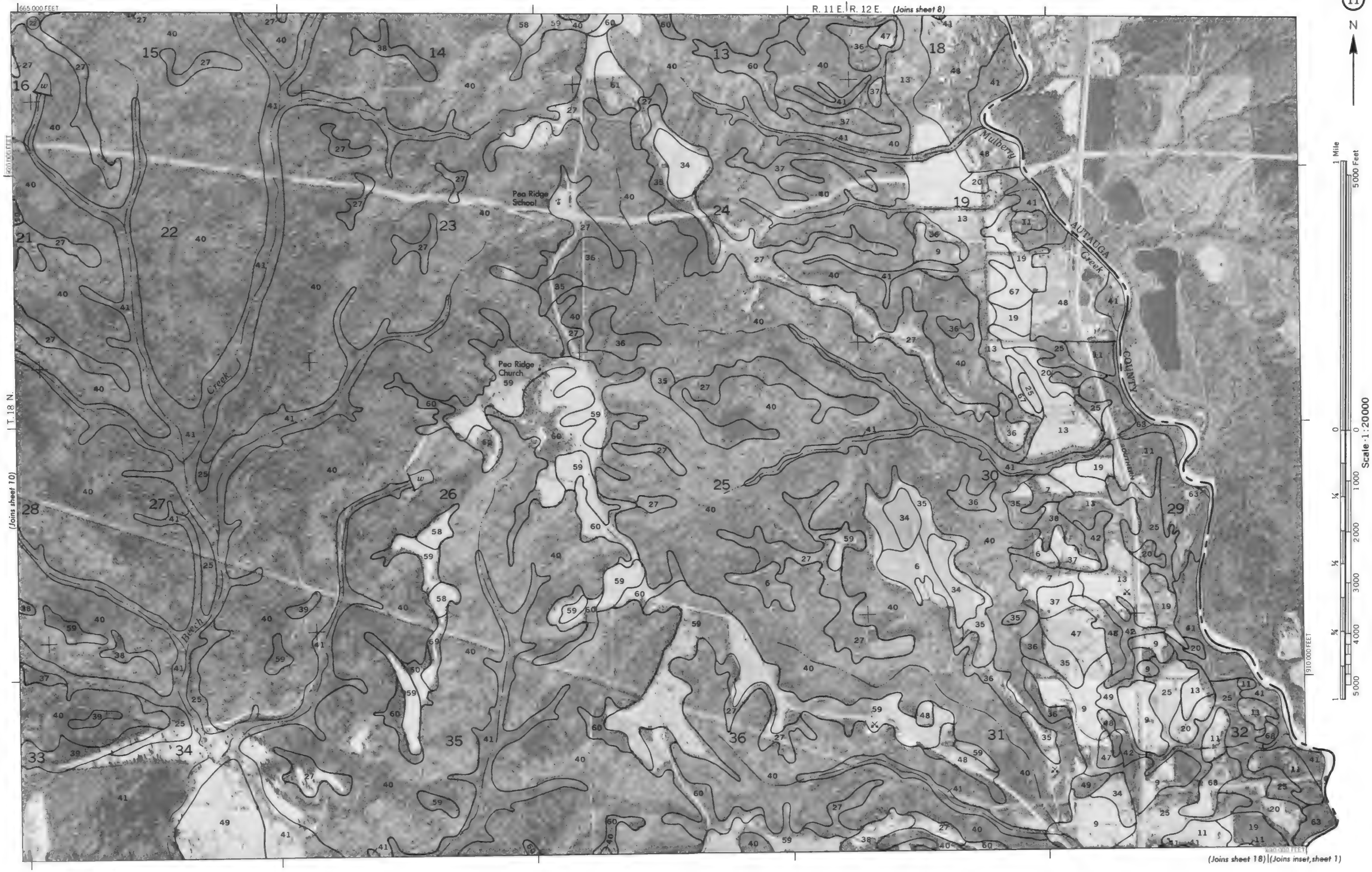

(Joins inset)
R. 10 E.
640 000 FEET
TALLADEGA NATIONAL FOREST
34
35
33
T. 18 N. | T. 19 N.
Little Oakmulgee
Creek
Oakmulgee
PERRY
COUNTY
Mitchell
Creek
935 000 FEET
(Joins sheet 7)
925 000 FEET
4
3
2
9
10
11
15
14
16
625 000 FEET
17
(Joins sheet 9)

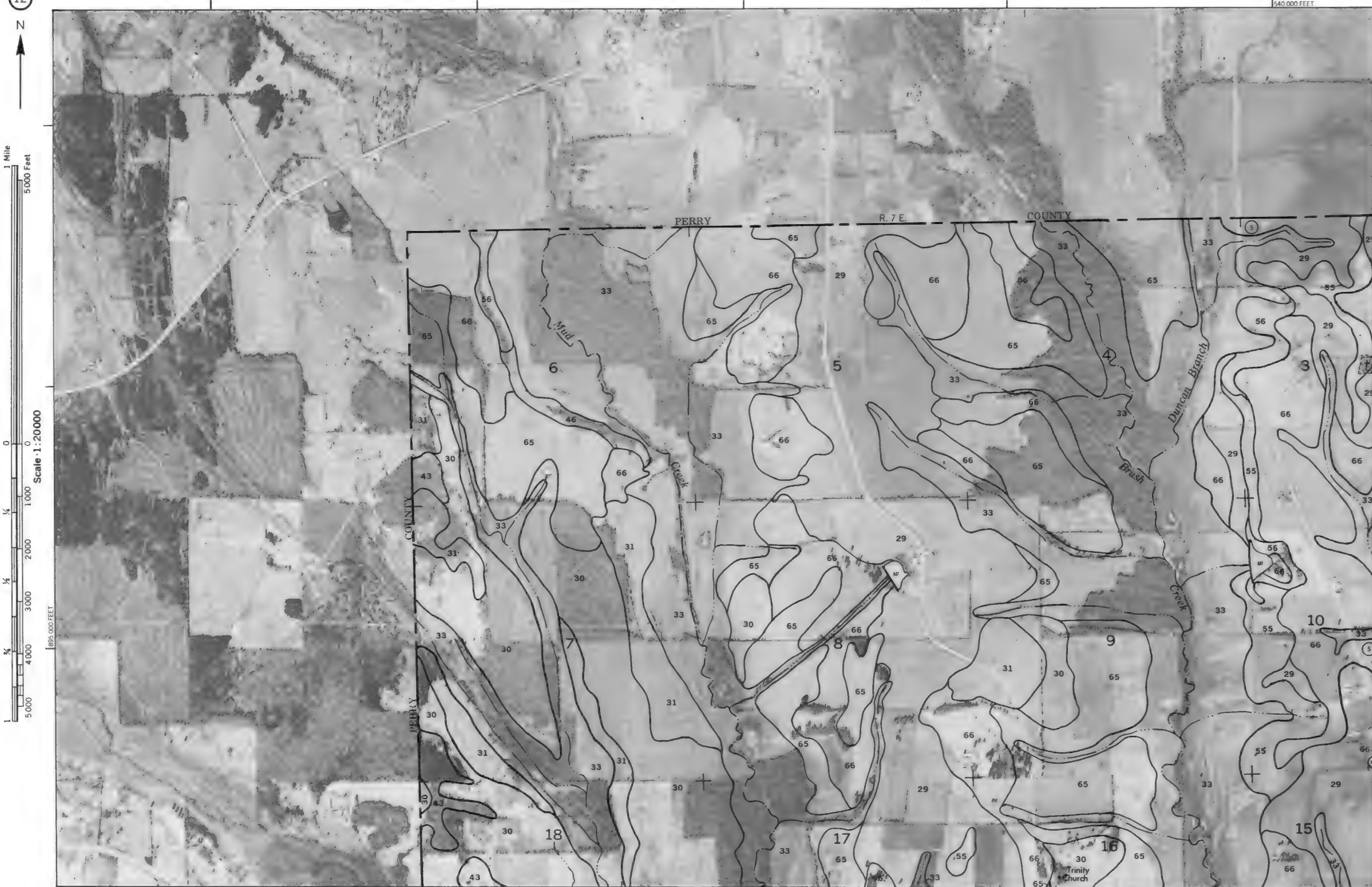

7
N
645 000 FEET
R. 10 E. | R. 11 E.
(Joins sheet 4)
TALLADEGA NATIONAL FOREST
T. 19 N.
T. 18 N.
935 000 FEET
Mt. Plesant Church
Grove Hill Church
College Hill Church
Pardue Lake
Stonewall
Martin Creek
Valley Creek
Branch
Bogg
Little Valley Creek
water
(Joins sheet 6)
(Joins sheet 8)
925 000 FEET
660 000 FEET
(Joins sheet 10)
1 Mile
5000 Feet
Scale 1:20000
0
¼
½
¾
1
1000
2000
3000
4000
5000
10
15

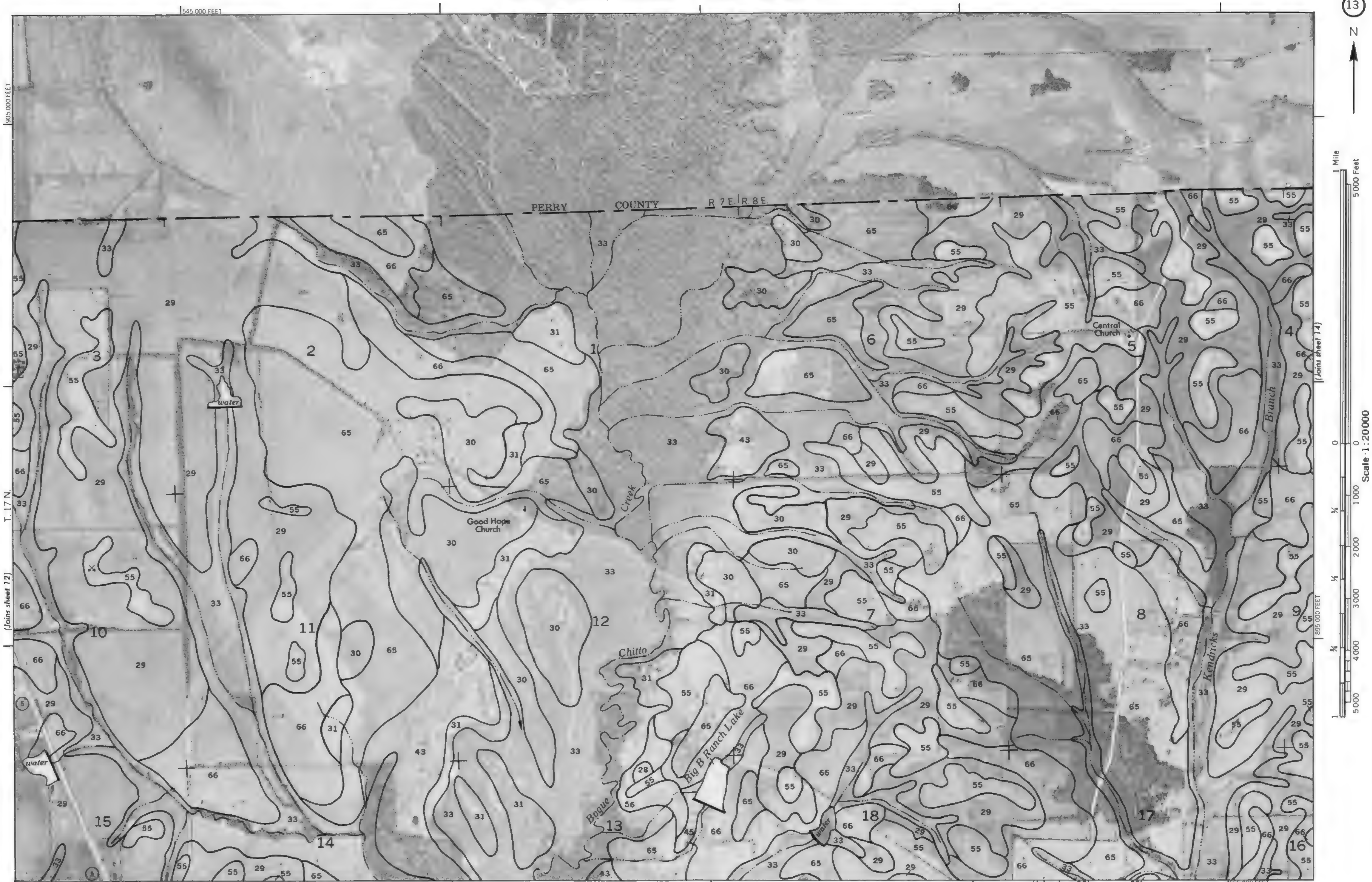

(Joins sheet 5)
R. 11 E. | R. 12 E.
685 000 FEET
N
T. 18 N. | T. 19 N.
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 7)
935 000 FEET
925 000 FEET
665 000 FEET
(Joins sheet 11)
Valley Creek Junction
St. James Church
Pleasant Grove Church
Beech Creek
Mulberry Creek
AUTAUGA COUNTY

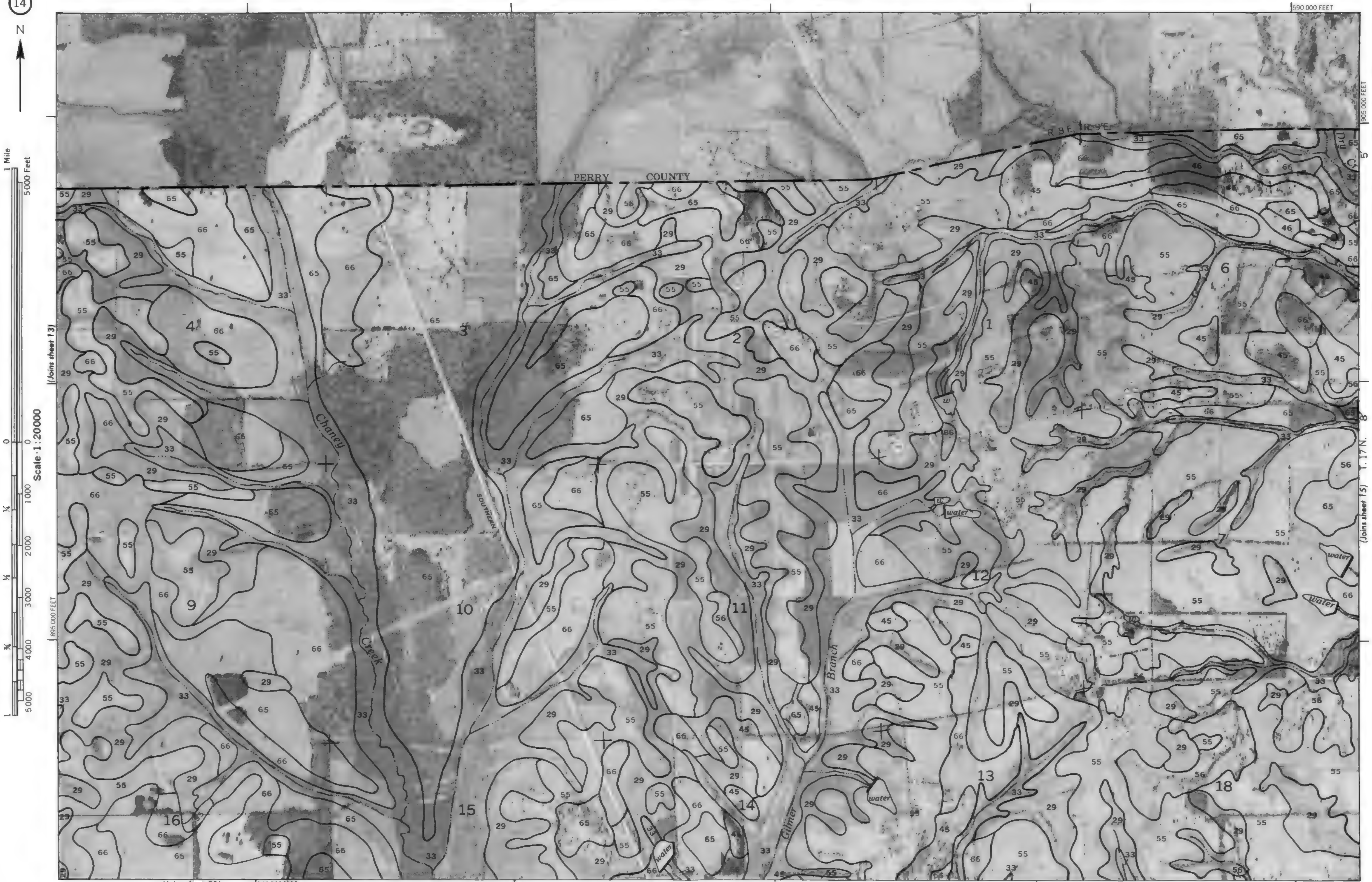

9
N
620 000 FEET
640 000 FEET
920 000 FEET
910 000 FEET
R. 10 E.
T. 18 N.
(Joins sheet 6)
(Joins sheet 10)
(Joins sheet 16)
Scale 1:20000
1 Mile
5000 Feet
COUNTY
Mitchell Creek
Perry Creek
Tate Branch
Oakmulgee
Childers Creek
Summerfield
water

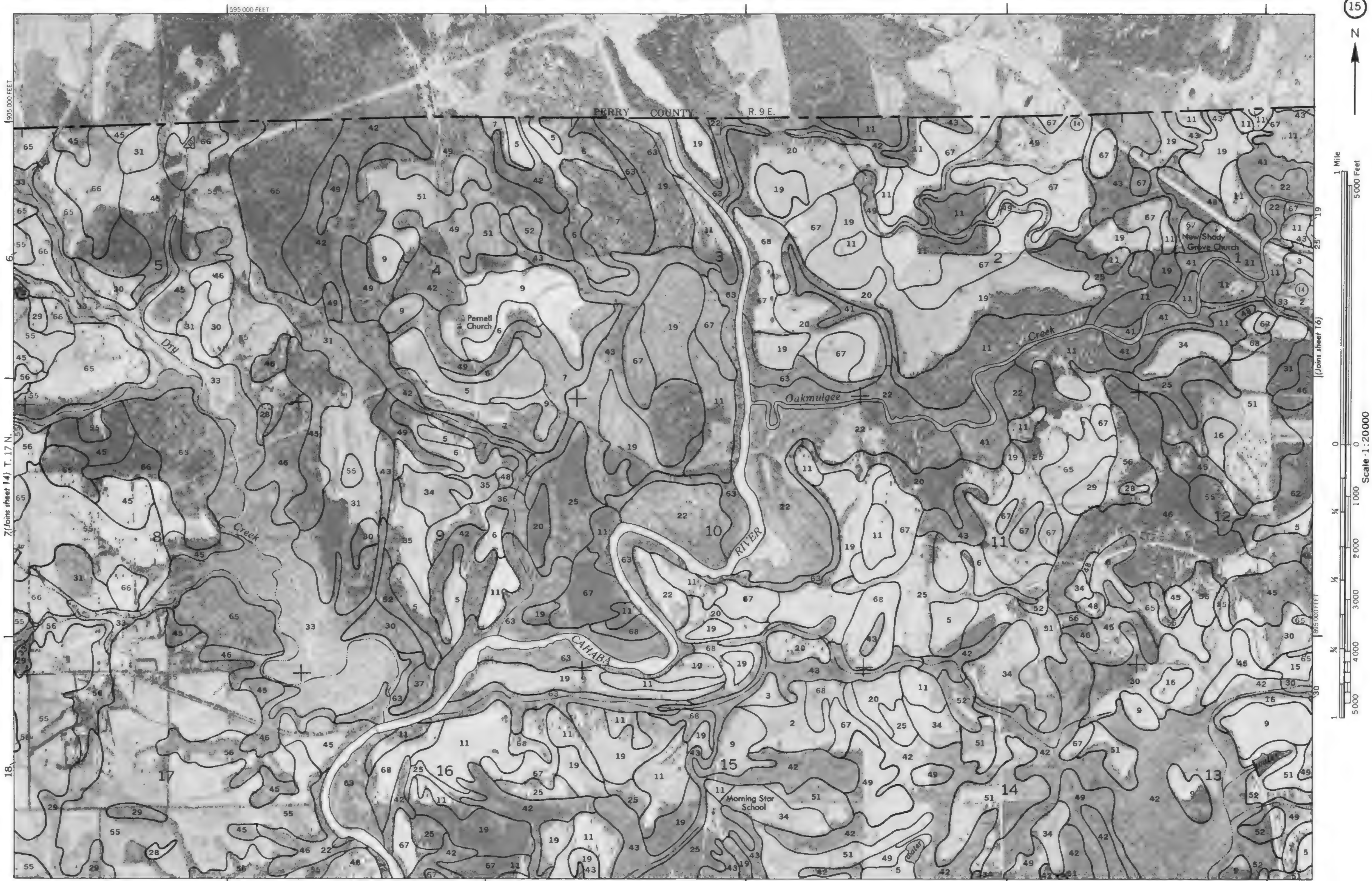
DALLAS COUNTY, ALABAMA — SHEET NUMBER 10

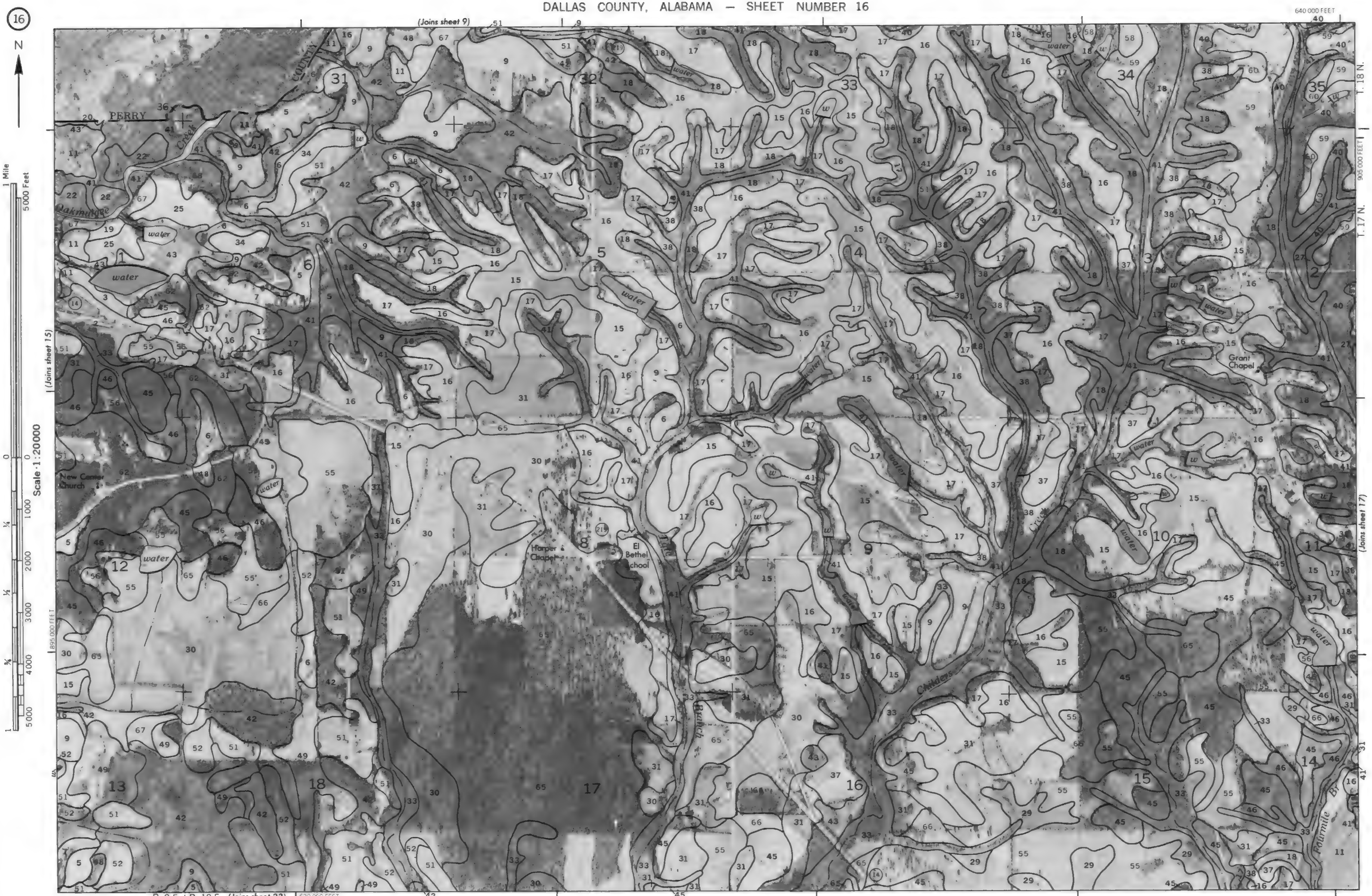

11
N
R. 11 E. R. 12 E. (Joins sheet 8)
(Joins sheet 10)
T. 18 N.
(Joins sheet 18) (Joins inset, sheet 1)
Pea Ridge School
Pea Ridge Church
Beech Creek
Mulberry
AUTAUGA Creek
AUTAUGA COUNTY
Scale 1:20000
1 Mile
5000 Feet
665 000 FEET
910 000 FEET


12
N
1 Mile
5000 Feet
Scale 1:20000
540 000 FEET
905 000 FEET
895 000 FEET
520 000 FEET
PERRY
R. 7 E.
COUNTY
T. 17 N.
(Joins sheet 13)
(Joins sheet 19)
Mud
Creek
Duncan Branch
Brush
Creek
Trinity Church
COUNTY
PERRY

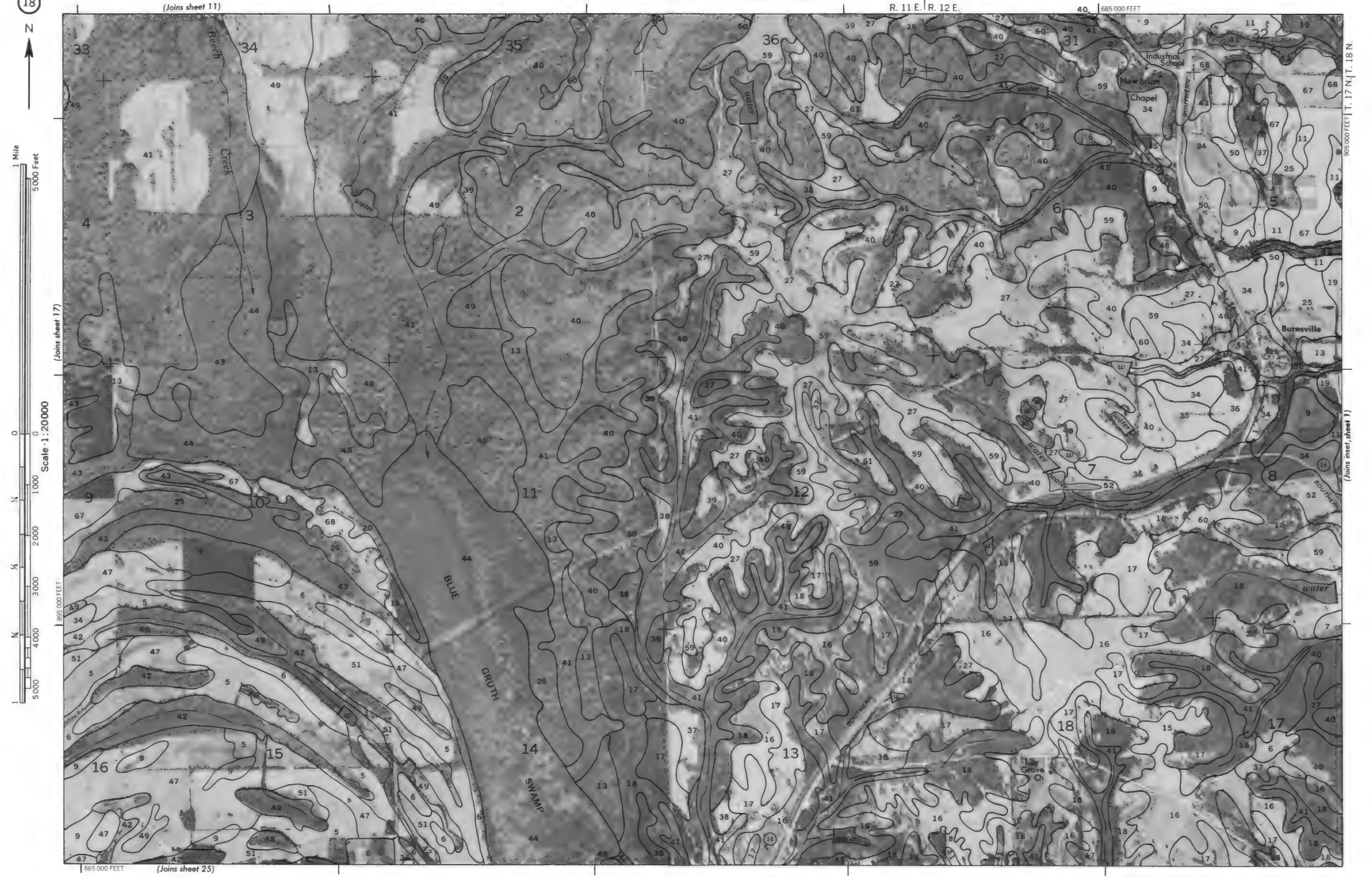

13
N
545 000 FEET
905 000 FEET
895 000 FEET
565 000 FEET
PERRY COUNTY
R. 7 E. | R. 8 E.
T. 17 N.
Good Hope Church
Central Church
Bogue Chitto Creek
Big B Ranch Lake
Kendricks Branch
water
(Joins sheet 14)
(Joins sheet 12)
(Joins sheet 20)
1 Mile
5000 Feet
Scale 1:20000

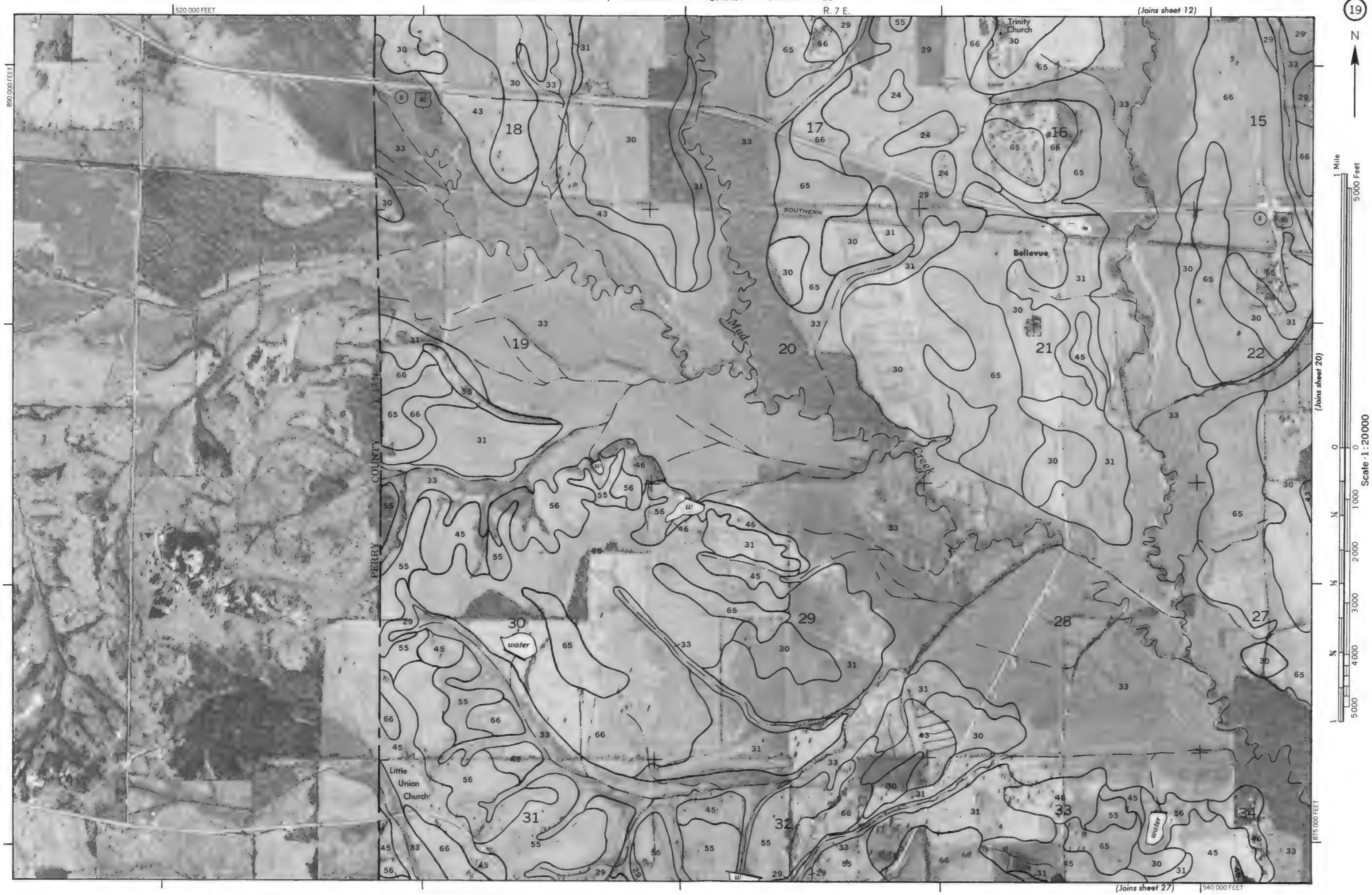

N
Scale 1:20000
1 Mile
5000 Feet
PERRY COUNTY
Chaney Creek
Gilmer Branch
SOUTHERN
(Joins sheet 13)
(Joins sheet 15)
(Joins sheet 21)
T. 17 N.
590 000 FEET
905 000 FEET
895 000 FEET
570 000 FEET
water

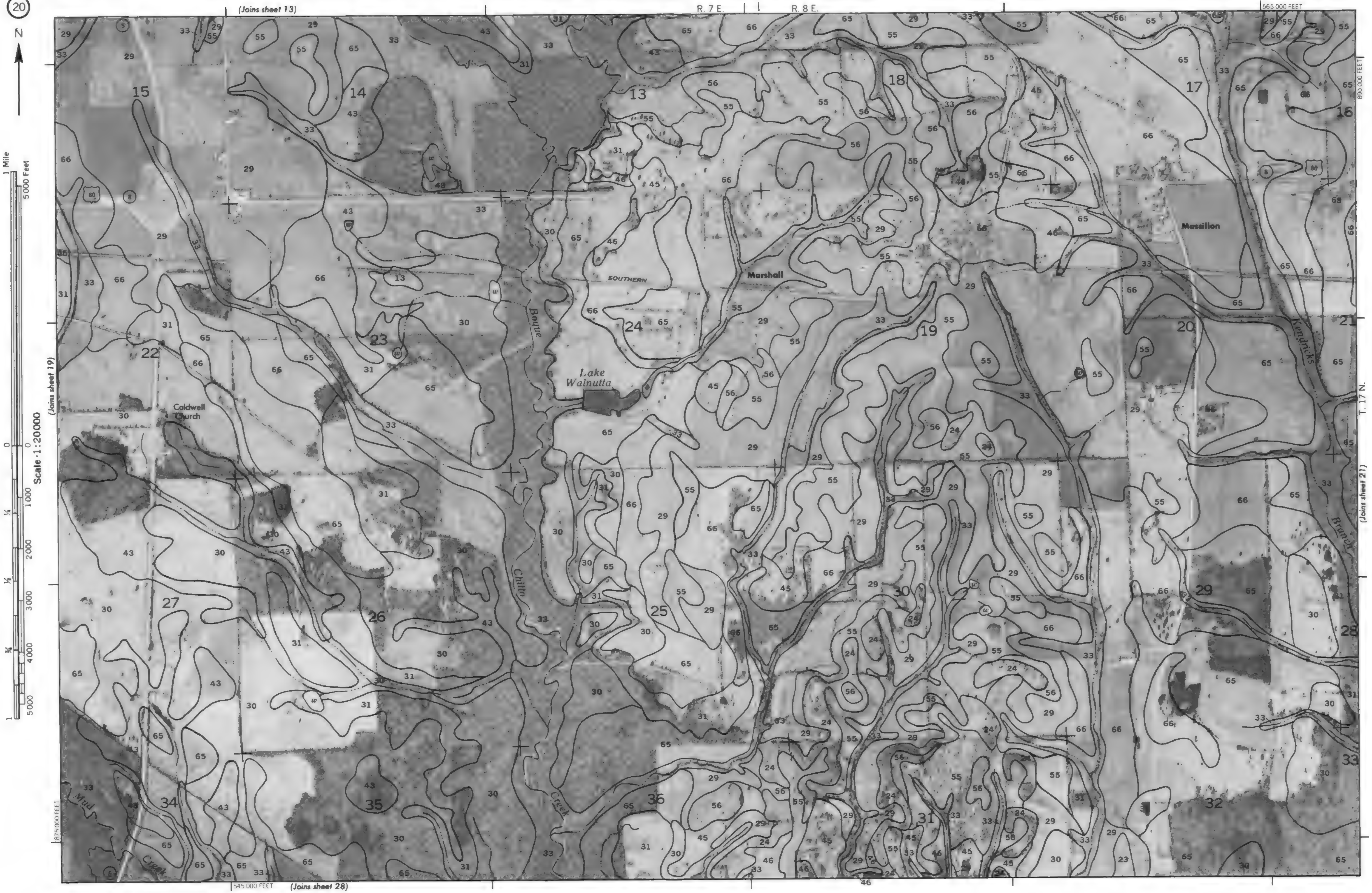

15
N
595 000 FEET
905 000 FEET
PERRY COUNTY
R. 9 E.
T. 17 N.
(Joins sheet 14)
(Joins sheet 16)
(Joins sheet 22)
615 000 FEET
885 000 FEET
Pernell Church
New Shady Grove Church
Morning Star School
Dry Creek
Creek
Oakmulgee Creek
CAHABA RIVER
1 Mile
5000 Feet
Scale 1:20000


16
N
(Joins sheet 9)
(Joins sheet 15)
(Joins sheet 17)
(Joins sheet 23)
R. 9 E. | R. 10 E.
T. 18 N.
T. 17 N.
640 000 FEET
620 000 FEET
905 000 FEET
895 000 FEET
1 Mile
5000 Feet
Scale 1:20000
PERRY
COUNTY
Oakmulgee
Creek
New Canaan Church
Harper Chapel
El Bethel School
Grant Chapel
Childers
Branch
Fourmile Br.
water


(Joins sheet 10)
(Joins sheet 18)
(Joins sheet 24)
(Joins sheet 16)
R. 10 E.
R. 11 E.
T. 18 N.
T. 17 N.
645 000 FEET
905 000 FEET
895 000 FEET
665 000 FEET
Moore Branch
Branch
Cemetery
St. John Church
Valley Creek Ch.
Valley Creek
water
BEECH CREEK SWAMP
17
N
Scale 1:20000
1 Mile
5000 Feet


N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 11)
(Joins sheet 17)
(Joins sheet 25)
(Joins inset, sheet 1)
R. 11 E. | R. 12 E.
T. 17 N. | T. 18 N.
685 000 FEET
905 000 FEET
895 000 FEET
665 000 FEET
Beech Creek
BLUE GRUTH SWAMP
Industrial School
New Bright Chapel
Burnsville
Lily Grove Ch
SOUTHERN
water

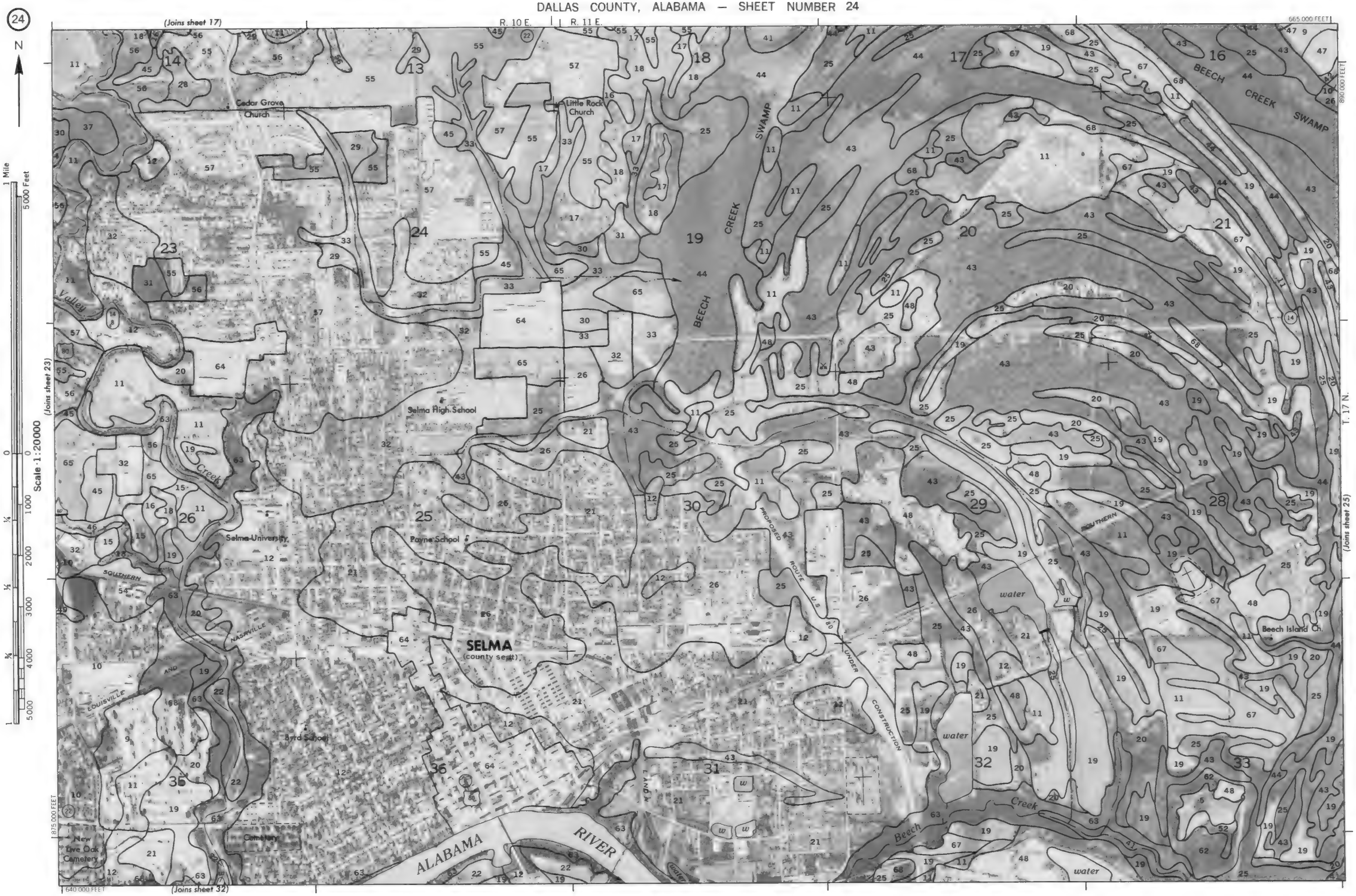

520 000 FEET
R. 7 E.
(Joins sheet 12)
19
N
890 000 FEET
Trinity Church
Bellevue
SOUTHERN
Mud Creek
PERRY COUNTY
Little Union Church
water
water
(Joins sheet 20)
(Joins sheet 27)
875 000 FEET
540 000 FEET
1 Mile
5000 Feet
Scale 1:20000


20
N
(Joins sheet 13)
R. 7 E.
R. 8 E.
565 000 FEET
890 000 FEET
Marshall
Massillon
SOUTHERN
Lake Walnutta
Bogue
Chitto
Creek
Caldwell Church
Kendricks
Branch
Mud
Creek
T. 17 N.
(Joins sheet 19)
(Joins sheet 21)
(Joins sheet 28)
545 000 FEET
875 000 FEET
1 Mile
5000 Feet
Scale 1:20000


21
N
R. 8 E. | R. 9 E.
(Joins sheet 14)
(Joins sheet 20)
(Joins sheet 22)
(Joins sheet 29)
570 000 FEET
890 000 FEET
875 000 FEET
690 000 FEET
T. 17 N.
Marion Junction
Mt. Zion Church
Macedonia Church
Union Grove School
Mt Olive School
Harrell
Harrell Crossroads School
Gilmer Branch
Creek
Chaney Creek
Kendricks Branch
Dry Creek
SOUTHERN
water
1 Mile
5 000 Feet
Scale 1:20000


22
N
(Joins sheet 15)
R. 9 E.
615 000 FEET
890 000 FEET
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 21)
(Joins sheet 23)
T. 17 N.
875 000 FEET
(Joins sheet 30)
595 000 FEET
SOUTHERN
Cahaba
River
Baker
Creek
Sherman Pond
Lake Lanier
water
Milton
Adams
Branch
Shiloh Jr High School
Br.

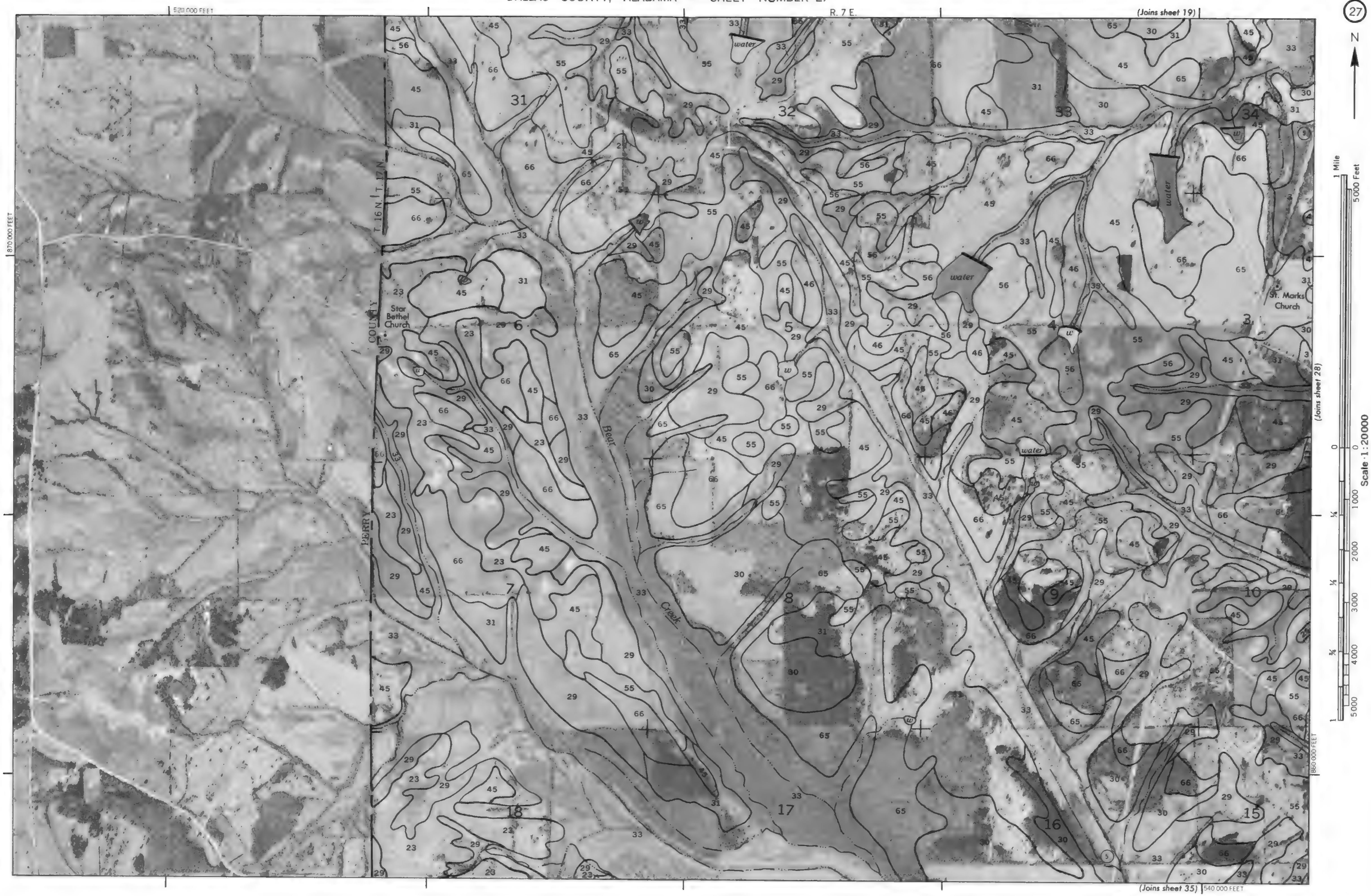

23
N
R. 9 E. | R. 10 E.
620 000 FEET
890 000 FEET
875 000 FEET
640 000 FEET
T. 17 N. | T. 18 N.
(Joins sheet 16)
(Joins sheet 22)
(Joins sheet 24)
(Joins sheet 31)
Pisgah Church
Potter
Westlawn Sch.
Mt Zion School
Union Grove School
Childers Creek
Jones Creek
All Branch
Beaver Dam Branch
Tate Br
Milton
SOUTHERN
water
1 Mile
5000 Feet
Scale 1:20000

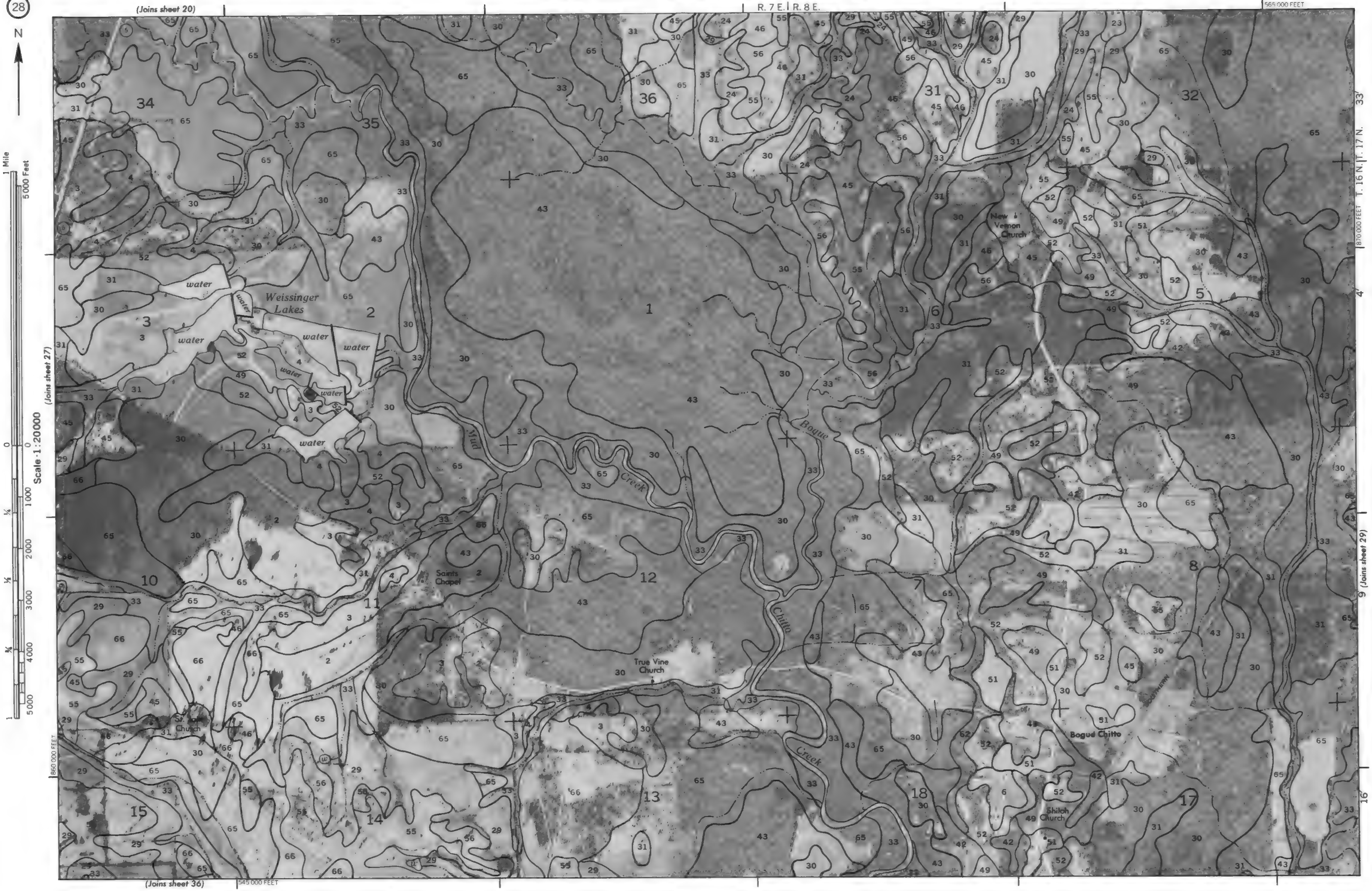

24
N
(Joins sheet 17)
R. 10 E.
R. 11 E.
665 000 FEET
890 000 FEET
(Joins sheet 23)
(Joins sheet 25)
(Joins sheet 32)
T. 17 N.
640 000 FEET
875 000 FEET
1 Mile
5000 Feet
Scale 1:20000
Cedar Grove Church
Little Rock Church
Selma High School
Selma University
Payne School
SELMA
(county seat)
Byrd School
New Live Oak Cemetery
Cemetery
Beech Island Ch.
BEECH CREEK SWAMP
Valley Creek
Creek
Beech Creek
ALABAMA RIVER
SOUTHERN
LOUISVILLE AND NASHVILLE
PROPOSED ROUTE U.S. 80 UNDER CONSTRUCTION
water

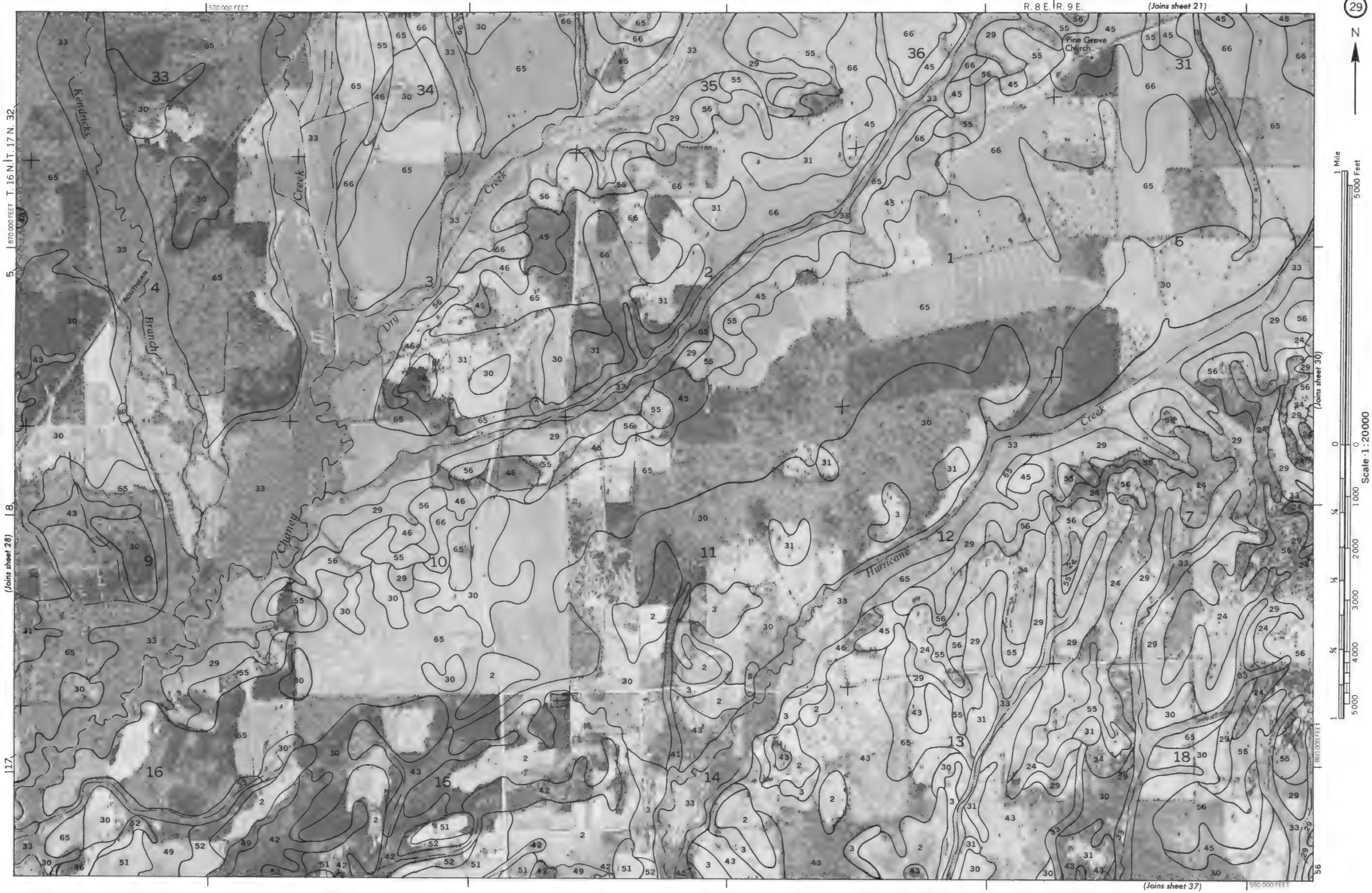

25
N
(Joins sheet 18)
R. 11 E. R. 12 E.
665 000 FEET
SELFIELD AIRPORT
BLUE GURTH SWAMP
BEECH CREEK SWAMP
Beech Creek
SOUTHERN
Brantley
Brantley High School
Galilee Church
Manila
water
T. 17 N.
(Joins sheet 24)
(Joins sheet 26)
(Joins sheet 33)
875 000 FEET
1 Mile
5 000 Feet
Scale 1:20000

DALLAS COUNTY, ALABAMA — SHEET NUMBER 26

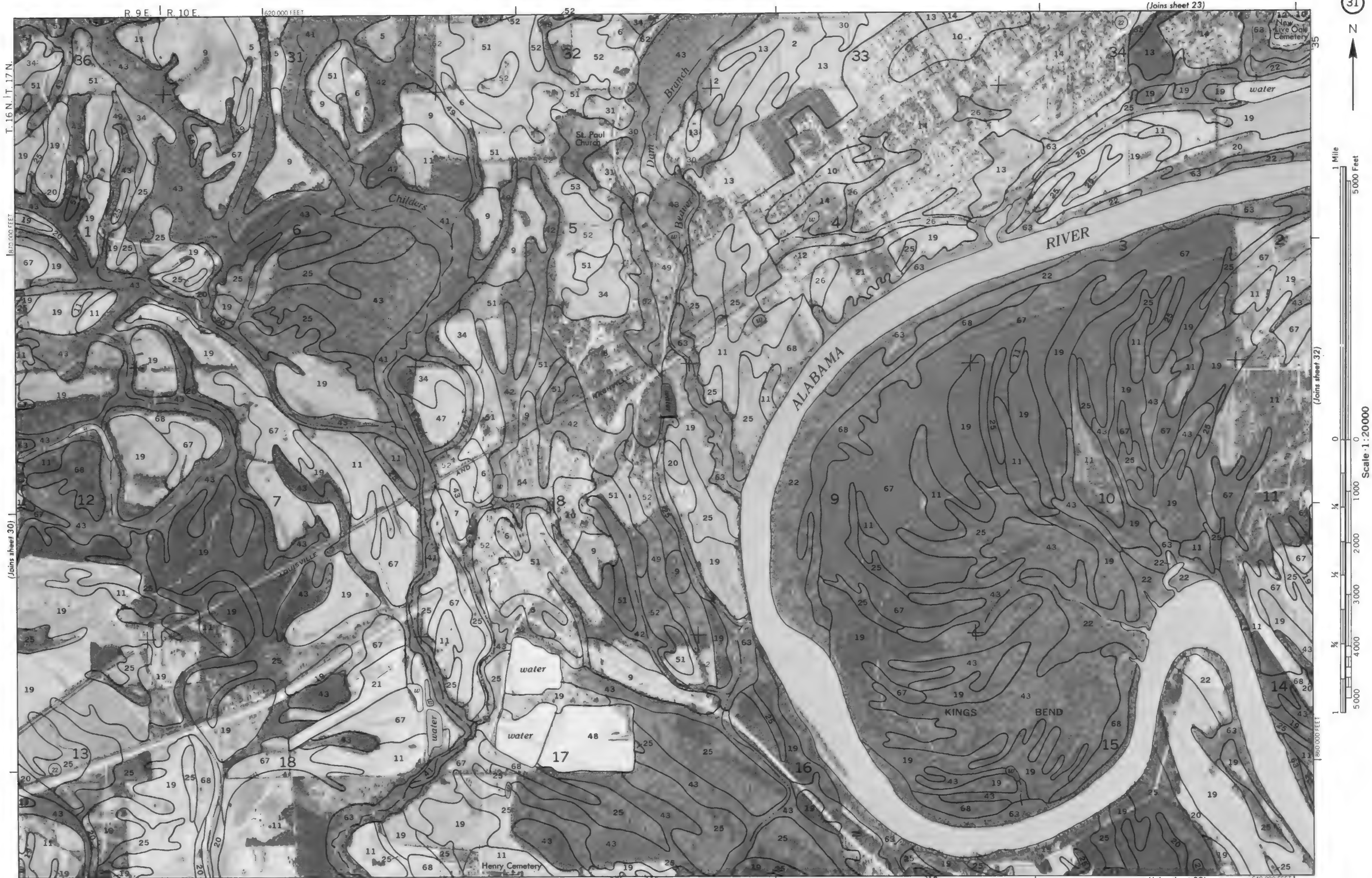
DALLAS COUNTY, ALABAMA — SHEET NUMBER 27

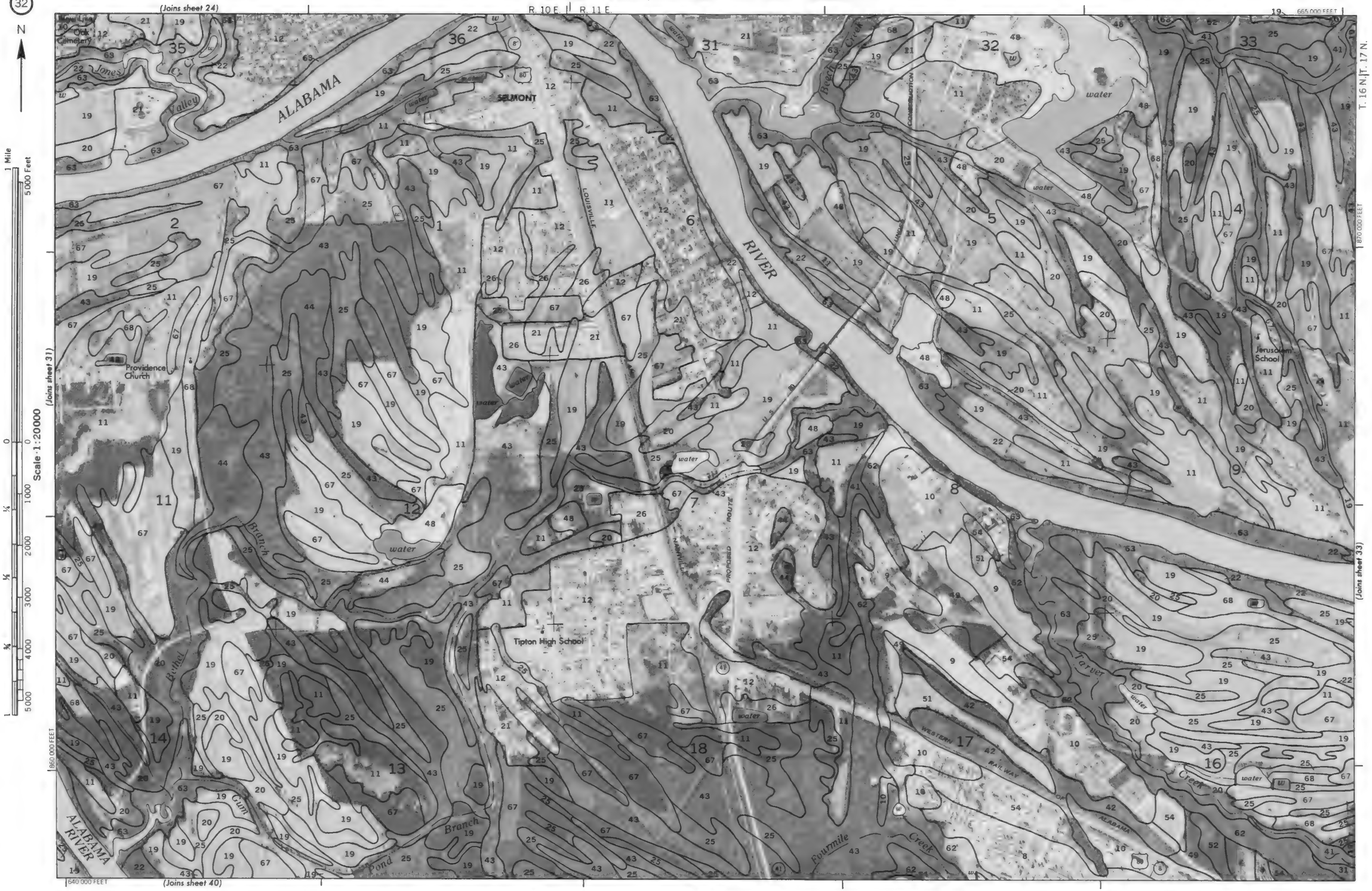



(Joins sheet 20)
R. 7 E.
R. 8 E.
565 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 27)
Weissinger Lakes
water
Mud Creek
Bogue Chitto Creek
Saints Chapel
True Vine Church
New Vernon Church
Bogue Chitto
Shiloh Church
T. 17 N.
T. 16 N.
870 000 FEET
860 000 FEET
(Joins sheet 29)
(Joins sheet 36)
545 000 FEET

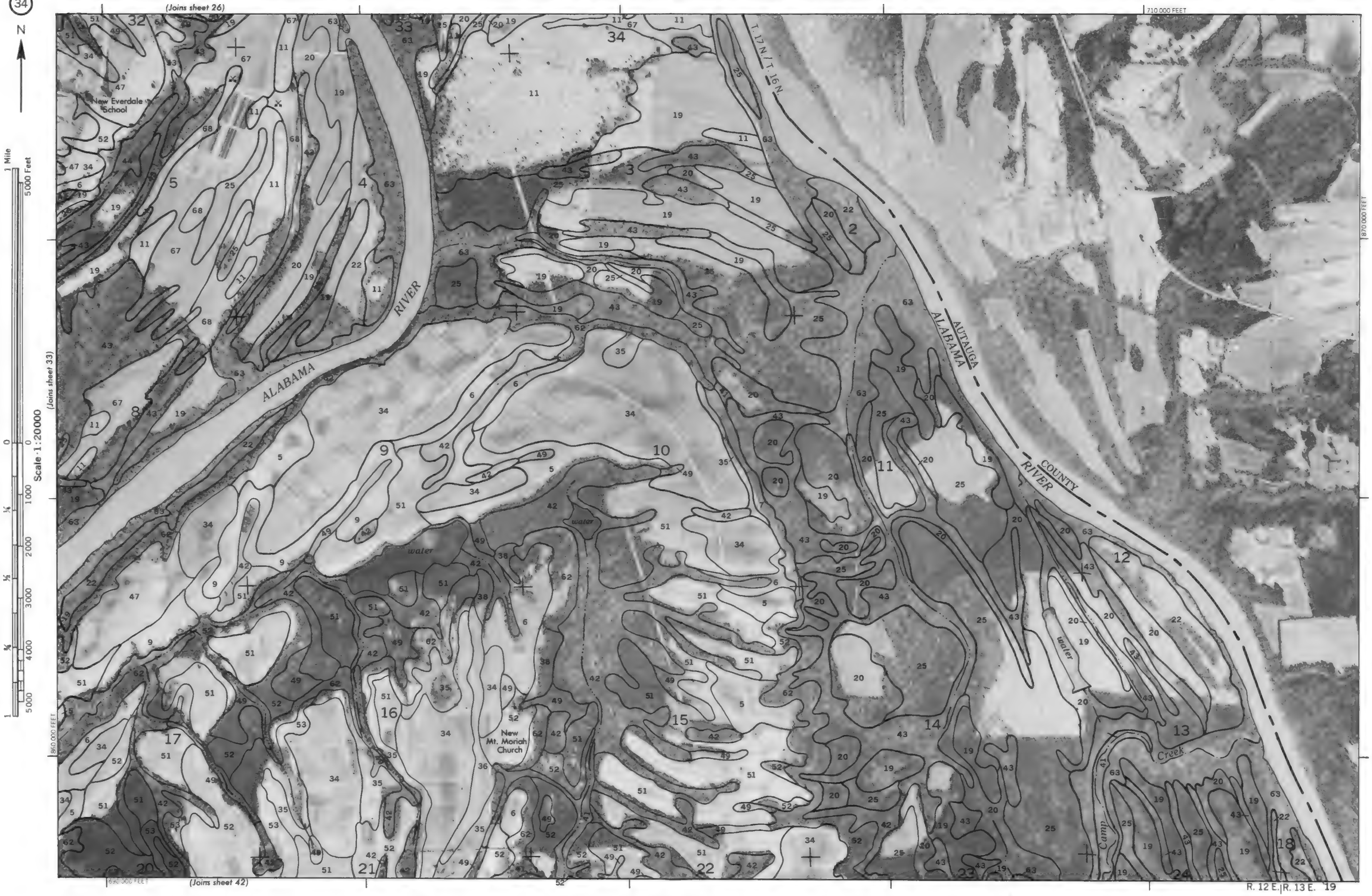

29
N
R. 8 E. R. 9 E.
(Joins sheet 21)
(Joins sheet 28)
(Joins sheet 30)
(Joins sheet 37)
T. 16 N. T. 17 N.
570 000 FEET
870 000 FEET
590 000 FEET
860 000 FEET
Kendricks Creek
Dry Creek
Chaney Creek
Hurricane Creek
Southern Branch
Pine Grove Church
1 Mile
5000 Feet
Scale 1:20000


30
N
(Joins sheet 22)
R. 9 E.
615 000 FEET
T. 16 N. | T. 17 N.
870 000 FEET
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 29)
(Joins sheet 31)
(Joins sheet 38)
595 000 FEET
860 000 FEET
Cahaba River
Hurricane Creek
Adams Branch
Creek
Tatum Creek
River
Louisville and Nashville
water


31
N
(Joins sheet 23)
(Joins sheet 30)
(Joins sheet 32)
(Joins sheet 39)
R. 9 E. | R. 10 E.
T. 16 N. | T. 17 N.
620 000 FEET
640 000 FEET
860 000 FEET
ALABAMA
RIVER
KINGS
BEND
Childers
Dam Branch
Beaver
St. Paul Church
New Live Oak Cemetery
Henry Cemetery
water
1 Mile
5000 Feet
Scale 1:20000

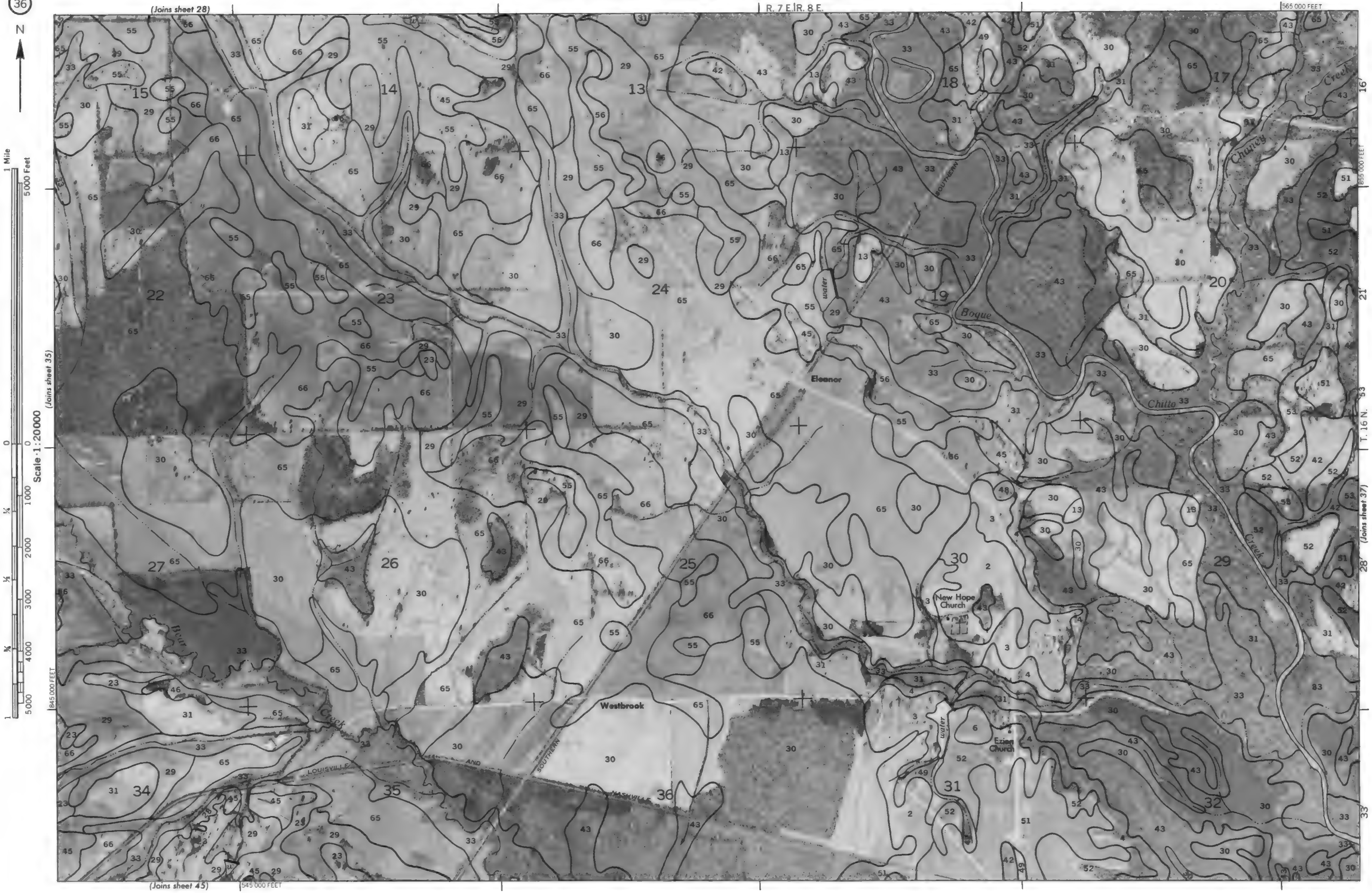

32
N
(Joins sheet 24)
R. 10 E. | R. 11 E.
T. 16 N. | T. 17 N.
(Joins sheet 31)
(Joins sheet 33)
(Joins sheet 40)
1 Mile
5000 Feet
Scale 1:20000
ALABAMA
RIVER
ALABAMA RIVER
Oak Cemetery
Jones Cr.
Valley
SELMONT
LOUISVILLE
Providence Church
Tipton High School
Jerusalem School
Beech Creek
Branch
Bethel
Gum
Branch
Pond
Fourmile
Creek
Tarver
Creek
WESTERN RAILWAY
water
640 000 FEET
860 000 FEET
870 000 FEET
665 000 FEET

DALLAS COUNTY, ALABAMA — SHEET NUMBER 33

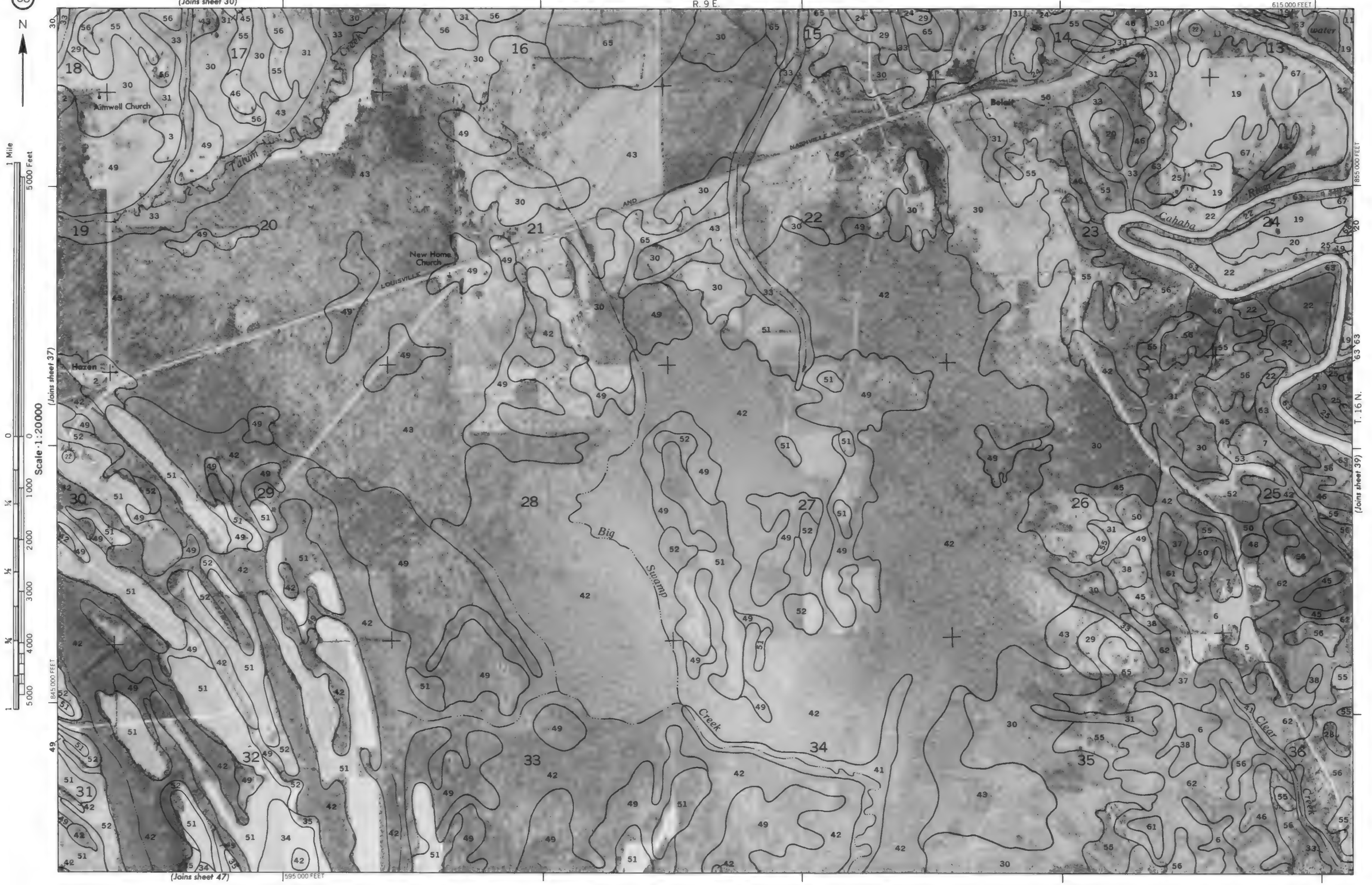

34
N
(Joins sheet 26)
(Joins sheet 33)
(Joins sheet 42)
Scale 1:20000
1 Mile
5000 Feet
710 000 FEET
870 000 FEET
860 000 FEET
690 000 FEET
New Everdale School
ALABAMA RIVER
ALABAMA RIVER
AUTAUGA COUNTY
T. 17 N./T. 16 N.
New Mt. Moriah Church
Camp Creek
water
R. 12 E. | R. 13 E.
19

(35)


520 000 FEET
R. 7 E.
(Joins sheet 27)
N
855 000 FEET
Concord Church
St. James Church
Bear Creek
English Creek
Little Creek
Chilachee Creek
PERRY COUNTY
T. 16 N.
water
(Joins sheet 36)
1 Mile
5000 Feet
Scale 1:20000
845 000 FEET
(Joins sheet 44)
540 000 FEET

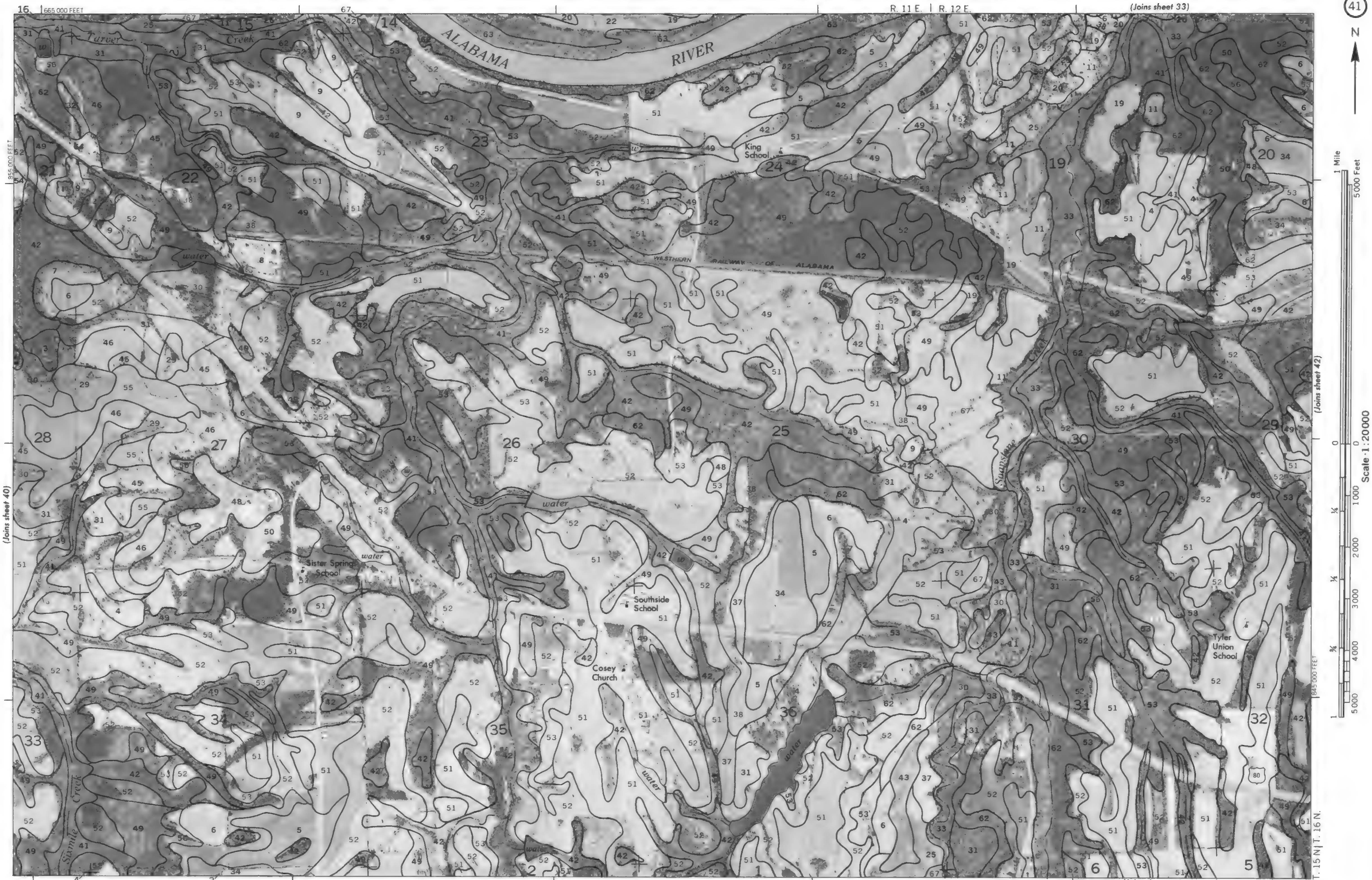

36
N
(Joins sheet 28)
R. 7 E. R. 8 E.
565 000 FEET
(Joins sheet 35)
(Joins sheet 37)
(Joins sheet 45)
545 000 FEET
845 000 FEET
865 000 FEET
T. 16 N.
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
Eleanor
Westbrook
New Hope Church
Ezion Church
Boque
Chitto
Chaney
Creek
Bear
water
SOUTHERN
LOUISVILLE
AND
NASHVILLE

DALLAS COUNTY, ALABAMA — SHEET NUMBER 37

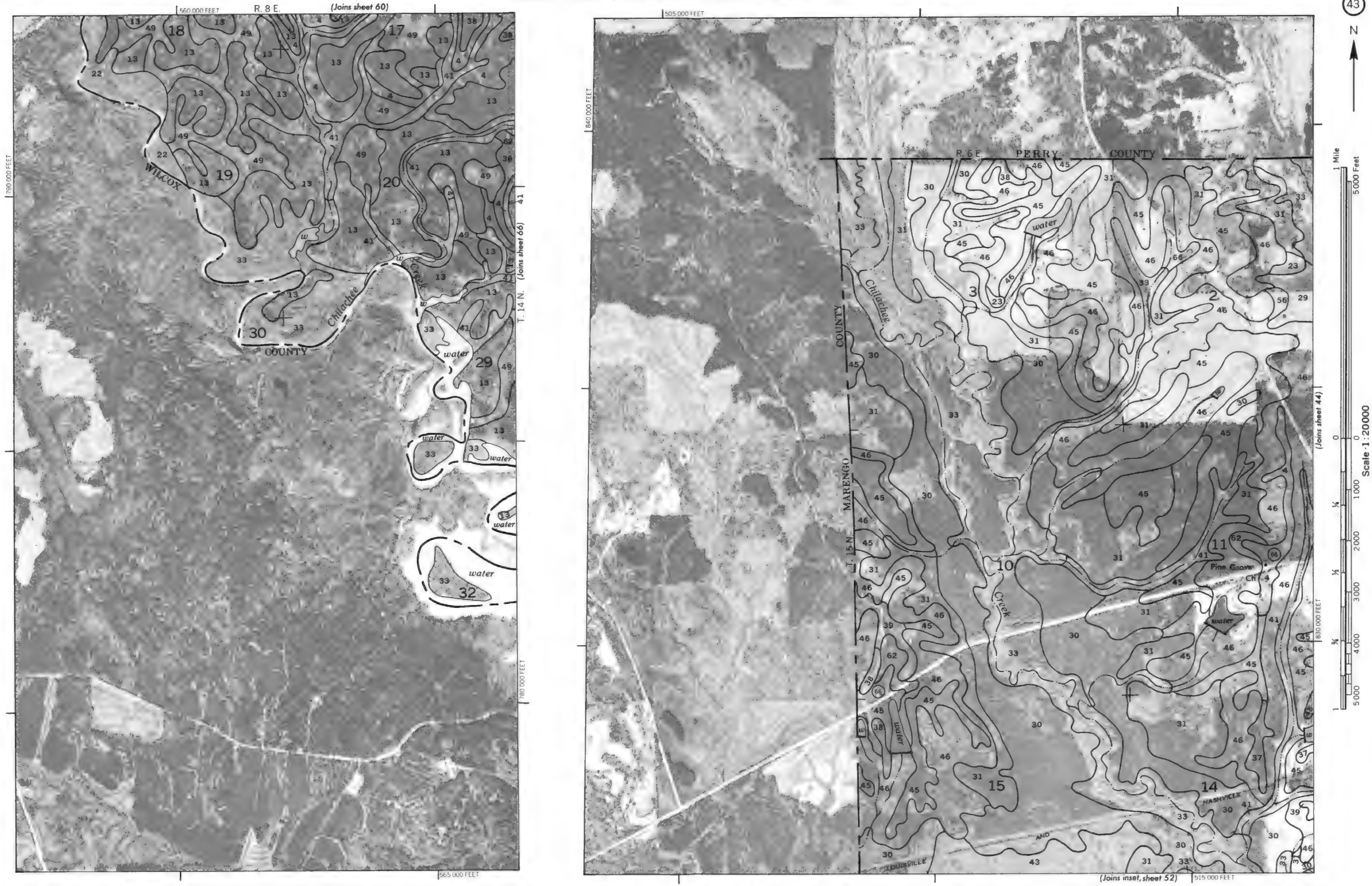

N
(Joins sheet 30)
R. 9 E.
615 000 FEET
855 000 FEET
T. 16 N.
(Joins sheet 39)
(Joins sheet 37)
(Joins sheet 47)
595 000 FEET
845 000 FEET
1 Mile
5000 Feet
Scale 1:20000
Aimwell Church
New Home Church
Hazen
Beloit
Tatum Creek
Cahaba River
water
LOUISVILLE AND NASHVILLE
Big Swamp Creek
Clear Creek


39
N
R. 9 E.
R. 10 E.
T. 16 N.
(Joins sheet 31)
(Joins sheet 40)
(Joins sheet 48)
(Joins sheet 38)
Henry Cemetery
New Hope Sch
Lily Grove Church
Childers Creek
Canada River
Whites Branch
ALABAMA RIVER
CAHABA RIVER
Cahaba
Clear Creek
water
620 000 FEET
640 000 FEET
845 000 FEET
865 000 FEET
1 Mile
5000 Feet
Scale 1:20000


40
N
(Joins sheet 32)
R. 10 E.
R. 11 E.
660 000 FEET
855 000 FEET
(Joins sheet 39)
(Joins sheet 41)
(Joins sheet 49)
645 000 FEET
845 000 FEET
T. 16 N.
1 Mile
5000 Feet
Scale 1:20000
ALABAMA
RIVER
BLACKWELL
BEND
White
Br
Sand Ridge School
Fourmile
Creek
Sixmile
Creek
CRAIG
AIR FORCE BASE
Pine Flat Church
water
HATCHER
BLUFF
Mountain
Branch
Lias
King
Mill
Br
Creek


41
N
(Joins sheet 33)
(Joins sheet 40)
(Joins sheet 42)
(Joins sheet 50)
R. 11 E. | R. 12 E.
T. 15 N. | T. 16 N.
665 000 FEET
685 000 FEET
855 000 FEET
845 000 FEET
ALABAMA RIVER
Turner Creek
King School
WESTERN RAILWAY OF ALABAMA
Swanstone Creek
Sister Spring School
Southside School
Cosey Church
Tyler Union School
Samille Creek
water
80
1 Mile
5000 Feet
Scale 1:20000


42
N
(Joins sheet 34)
R. 12 E.
710 000 FEET
Camp Creek
Weeping Willow Church
Camp Creek Church
Tyler
WESTERN RAILWAY OF ALABAMA
water
ALABAMA RIVER
LOWNDES COUNTY
(Joins sheet 41)
Scale 1:20000
1 Mile
5000 Feet
855 000 FEET
845 000 FEET
690 000 FEET
(Joins sheet 51)
T. 15 N.


43
N
560 000 FEET
R. 8 E.
(Joins sheet 60)
790 000 FEET
WILCOX
COUNTY
Chilachee
Creek
water
T. 14 N.
(Joins sheet 66)
780 000 FEET
565 000 FEET
505 000 FEET
840 000 FEET
R. 6 E.
PERRY
COUNTY
MARENGO
COUNTY
T. 15 N.
Chilachee
Creek
Pine Grove
Ch.
(Joins sheet 44)
830 000 FEET
NASHVILLE
AND
LOUISVILLE
(Joins inset, sheet 52)
515 000 FEET
1 Mile
5000 Feet
Scale 1:20000


N
Scale 1:20000
1 Mile
5000 Feet
R. 6 E. | R. 7 E.
T. 16 N.
T. 15 N.
(Joins sheet 35)
(Joins sheet 43)
(Joins sheet 45)
(Joins sheet 52)
540 000 FEET
840 000 FEET
830 000 FEET
520 000 FEET
PERRY COUNTY
Bon Aire Lake
Blalock
Concord Church
Safford
Central Mills
Center Chapel
Christian Light Ch.
Little Chilachee Creek
English Creek
Rogers Creek
NASHVILLE
LOUISVILLE
water

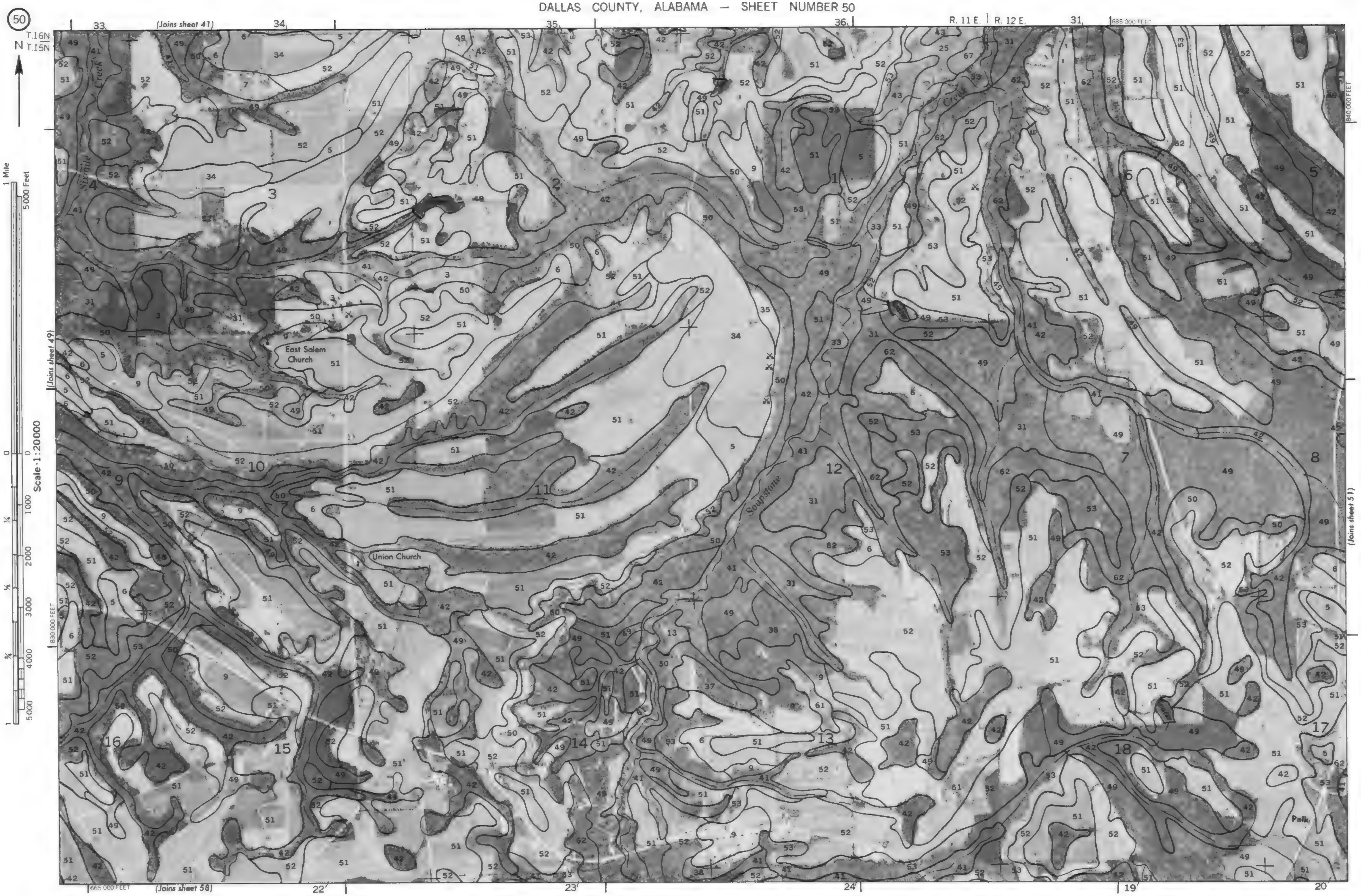

45
N
(Joins sheet 36)
(Joins sheet 46)
(Joins sheet 43)
(Joins sheet 53)
545 000 FEET
565 000 FEET
840 000 FEET
830 000 FEET
R. 7 E. | R. 8 E.
T. 16 N.
T. 15 N.
Israelite Church
Martin
Martin Station School
Green Grove Church
LOUISVILLE AND NASHVILLE
SOUTHERN
Bear Creek
Cane Creek
Chilito Creek
Boyne
water
1 Mile
5000 Feet
Scale 1:20000

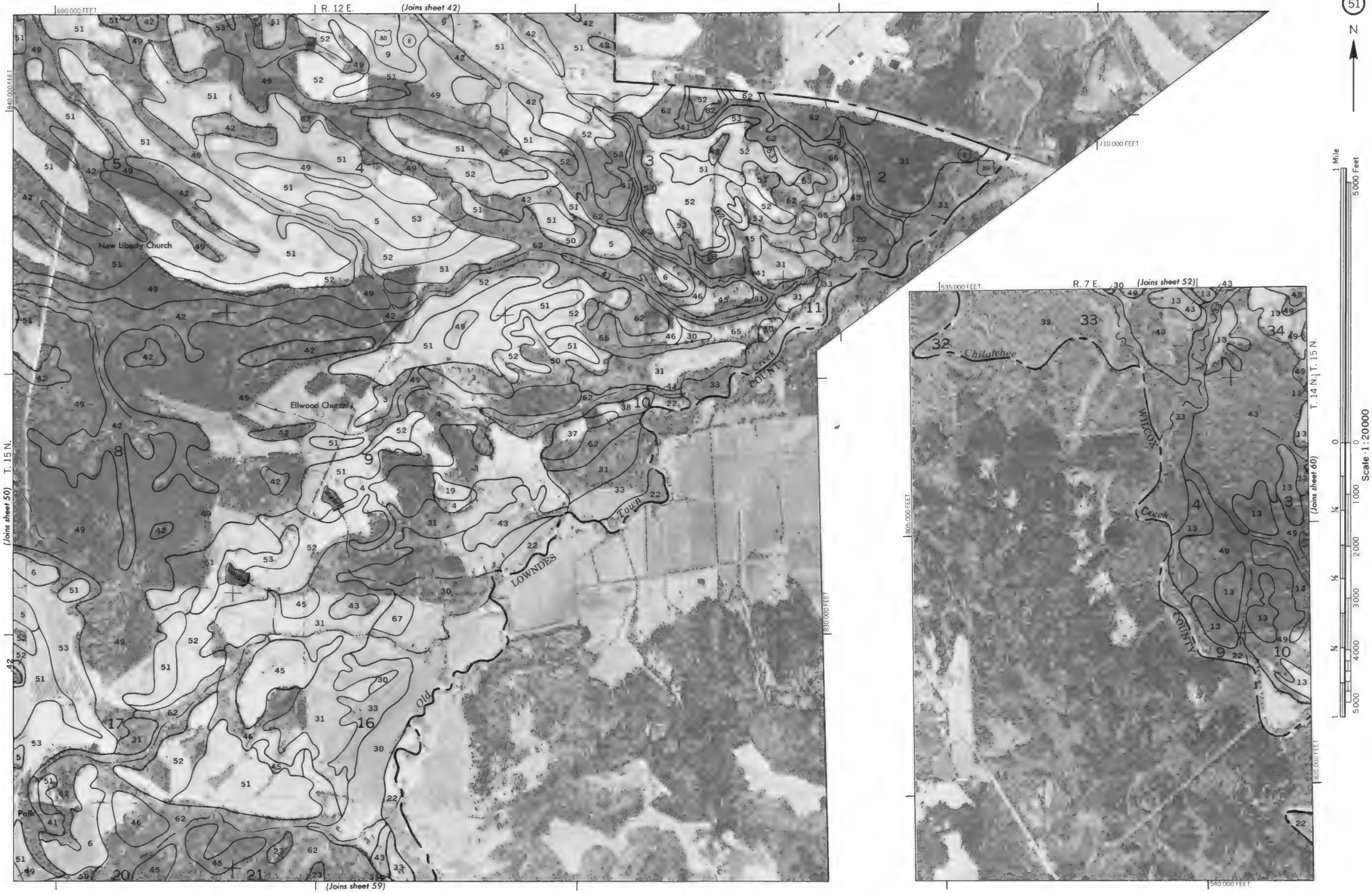

(Joins sheet 37)
R. 8 E. R. 9 E.
590 000 FEET
T. 15 N. T. 16 N.
840 000 FEET
(Joins sheet 45)
(Joins sheet 47)
(Joins sheet 54)
570 000 FEET
830 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
Orrville
Gloss School
Fulton Cemetery
John The Baptist School
Orrville Cemetery
Keith High School
McHugh Lake
Branch
Bogue Chitto Creek
Dusty
St. Marys Church
Rising Star Church
Big Swamp Creek
Big Swamp Branch
NASHVILLE
AND


595 000 FEET
R. 9 E.
(Joins sheet 38)
T. 15 N. | T. 16 N.
N
840 000 FEET
(Joins sheet 46)
(Joins sheet 48)
830 000 FEET
(Joins sheet 55)
615 000 FEET
Big Swamp Creek
Freewill Church
Shiloh Chapel
WHITES BLUFF
ALABAMA RIVER
CALHOUN BEND
Threemile Ditch
Big Swamp Branch
1 Mile
5000 Feet
Scale 1:20000

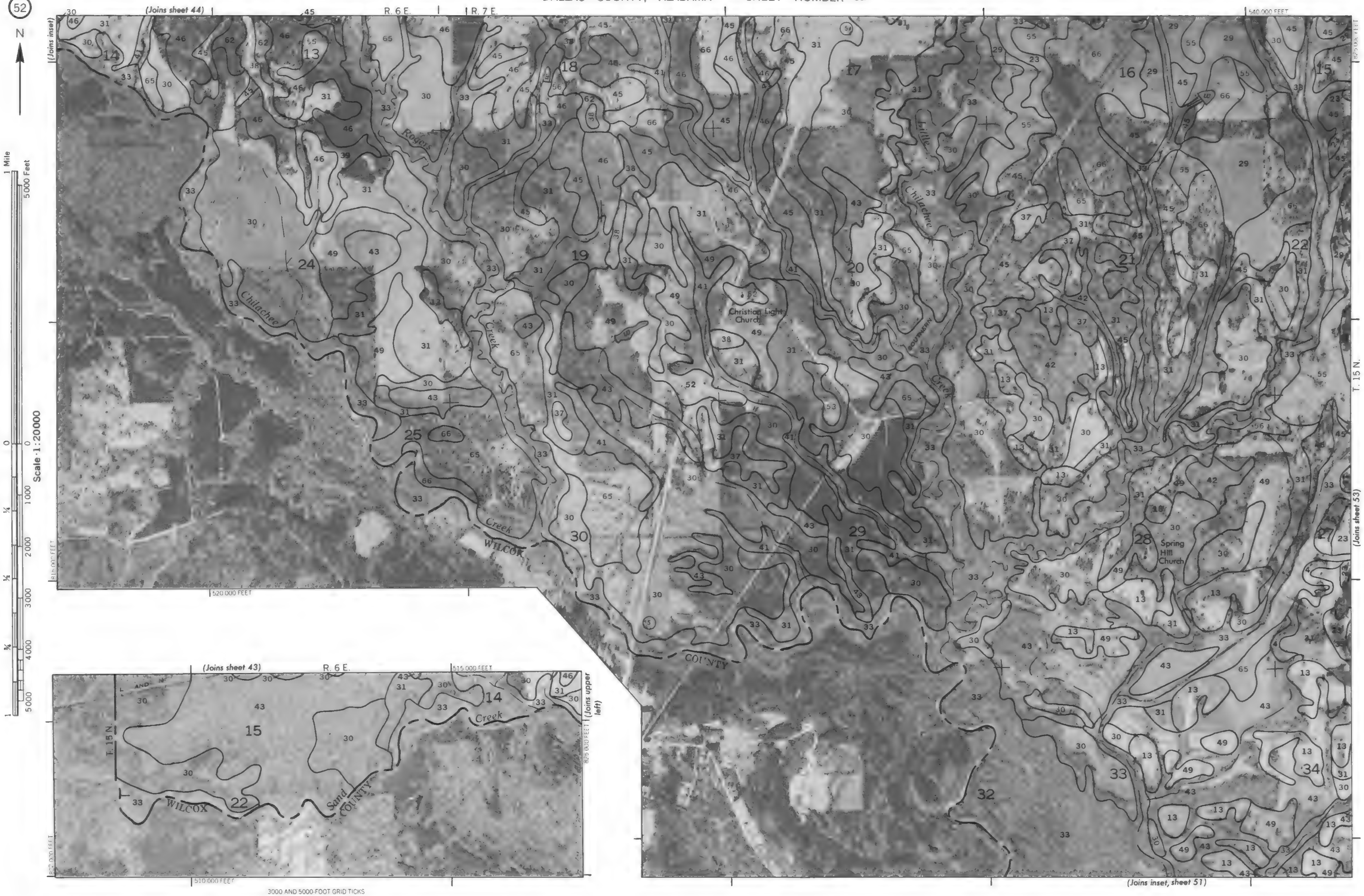

48
N
R. 9 E. | R. 10 E.
(Joins sheet 39)
(Joins sheet 47)
(Joins sheet 49)
(Joins sheet 56)
T. 16 N. | T. 15 N.
1 Mile
5000 Feet
Scale 1:20000
640 000 FEET
840 000 FEET
830 000 FEET
620 000 FEET
Clear Cr
Big Ditch
ALABAMA RIVER
Cook Branch
Reece Branch
Threemile Ditch
Creek
Mt Nebo


49
N
(Joins sheet 40)
(Joins sheet 48)
(Joins sheet 50)
(Joins sheet 57)
R. 10 E. | R. 11 E.
T. 16 N. | T. 15 N.
640 000 FEET
840 000 FEET
830 000 FEET
660 000 FEET
King Mill Branch
Lias Creek
Sixmile Creek
Sorrell Branch
Berlin Branch
New Shiloh Church
Shiloh High School
Shiloh Church
Sardis
Mt Nebo
Adam Grove Church
E. Dallas School
Shady Grove Church
Nashville and Louisville
1 Mile
5000 Feet
Scale 1:20000


50
N
T.16N
T.15N
(Joins sheet 41)
R. 11 E.
R. 12 E.
685 000 FEET
840 000 FEET
(Joins sheet 49)
(Joins sheet 51)
(Joins sheet 58)
665 000 FEET
830 000 FEET
East Salem Church
Union Church
Soapstone
Creek
Polk
Scale 1:20000
1 Mile
5000 Feet

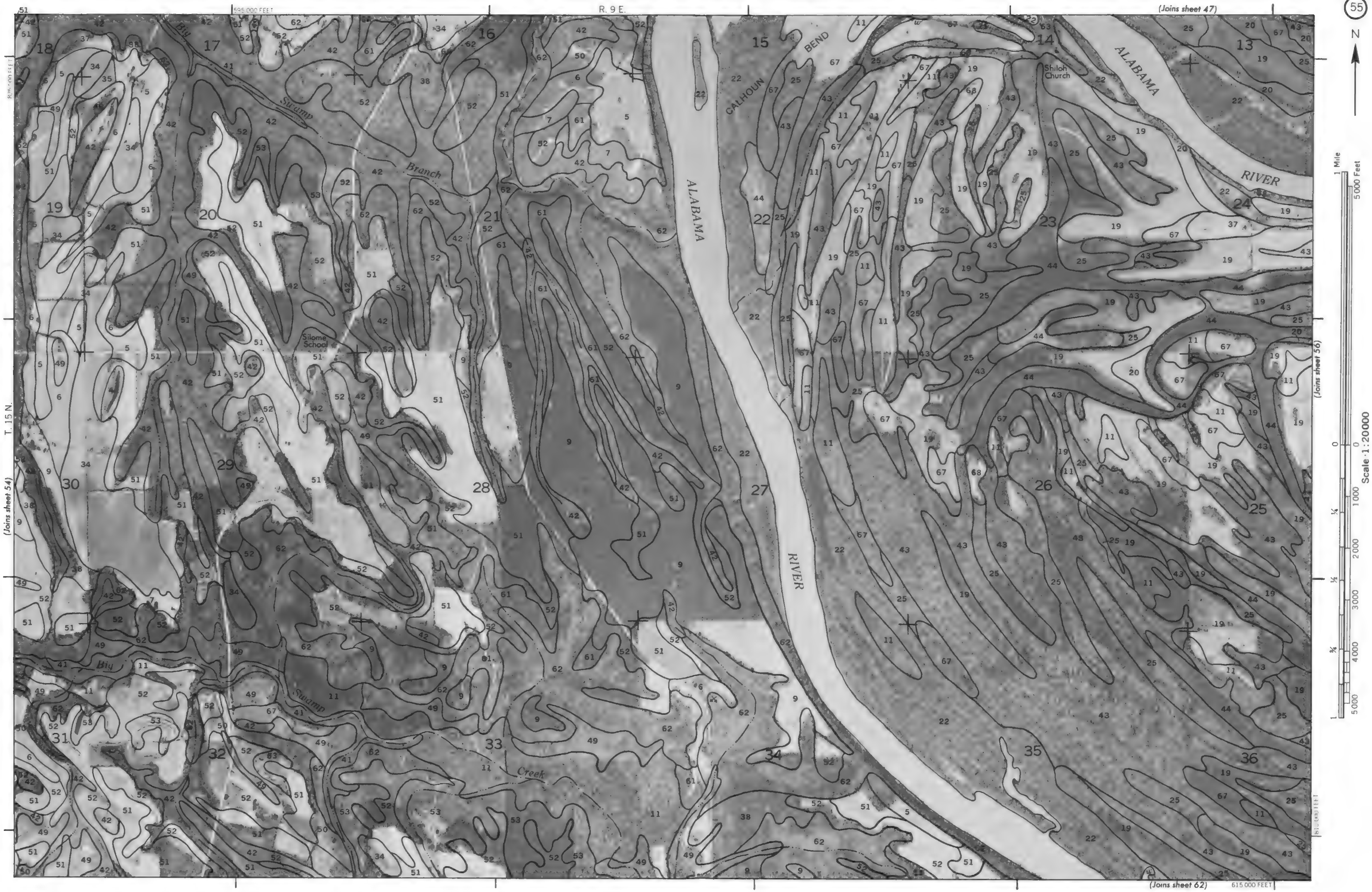


51
N
R. 12 E.
(Joins sheet 42)
690 000 FEET
840 000 FEET
710 000 FEET
830 000 FEET
New Liberty Church
Ellwood Church
T. 15 N.
(Joins sheet 50)
(Joins sheet 59)
LOWNDES
COUNTY
Town
Creek
Old
Polk
R. 7 E.
(Joins sheet 52)
535 000 FEET
540 000 FEET
805 000 FEET
Chilatchee
Creek
WILCOX
COUNTY
T. 14 N. | T. 15 N.
(Joins sheet 60)
1 Mile
5000 Feet
Scale 1:20000

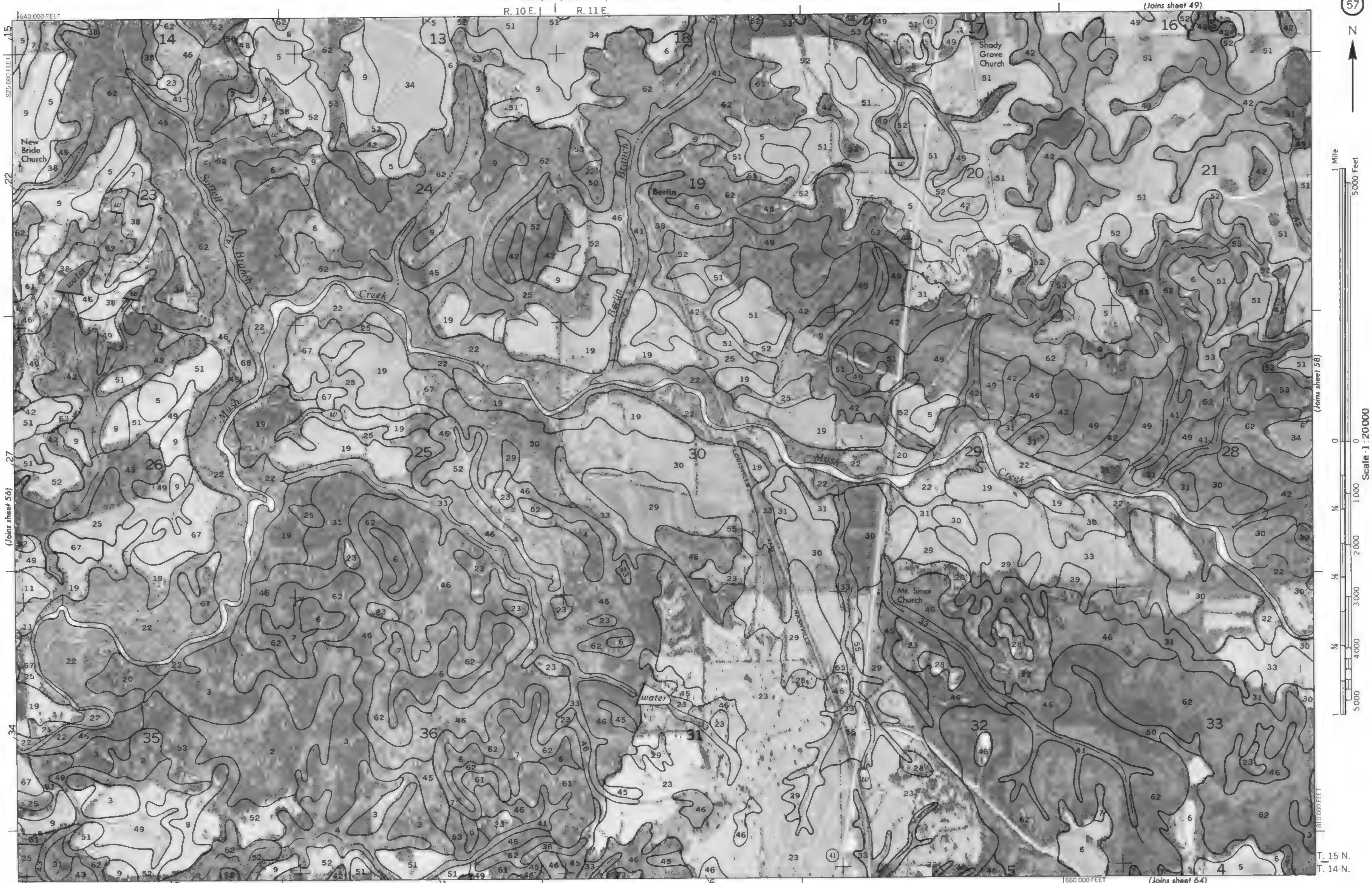

52
N
(Joins sheet 44)
R. 6 E.
R. 7 E.
540 000 FEET
(Joins inset)
Rogers
Chilachee
Creek
Little
Chilachee
Creek
SOUTHERN
Christian Light Church
Spring Hill Church
WILCOX
COUNTY
T. 15 N.
(Joins sheet 53)
(Joins inset, sheet 51)
520 000 FEET
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 43)
R. 6 E.
515 000 FEET
(Joins upper left)
T. 15 N.
Creek
WILCOX
Sand
COUNTY
510 000 FEET
3000 AND 5000-FOOT GRID TICKS


53
N
R. 7 E. | R. 8 E.
T. 15 N.
545 000 FEET
565 000 FEET
810 000 FEET
(Joins sheet 45)
(Joins sheet 52)
(Joins sheet 54)
(Joins sheet 60)
New Hebron Church
Sedgefield
Aimwell Church
Hogan Creek
Creek
water
Scale 1:20000
1 Mile
5000 Feet
0 1000 2000 3000 4000 5000
0 ¼ ½ ¾ 1

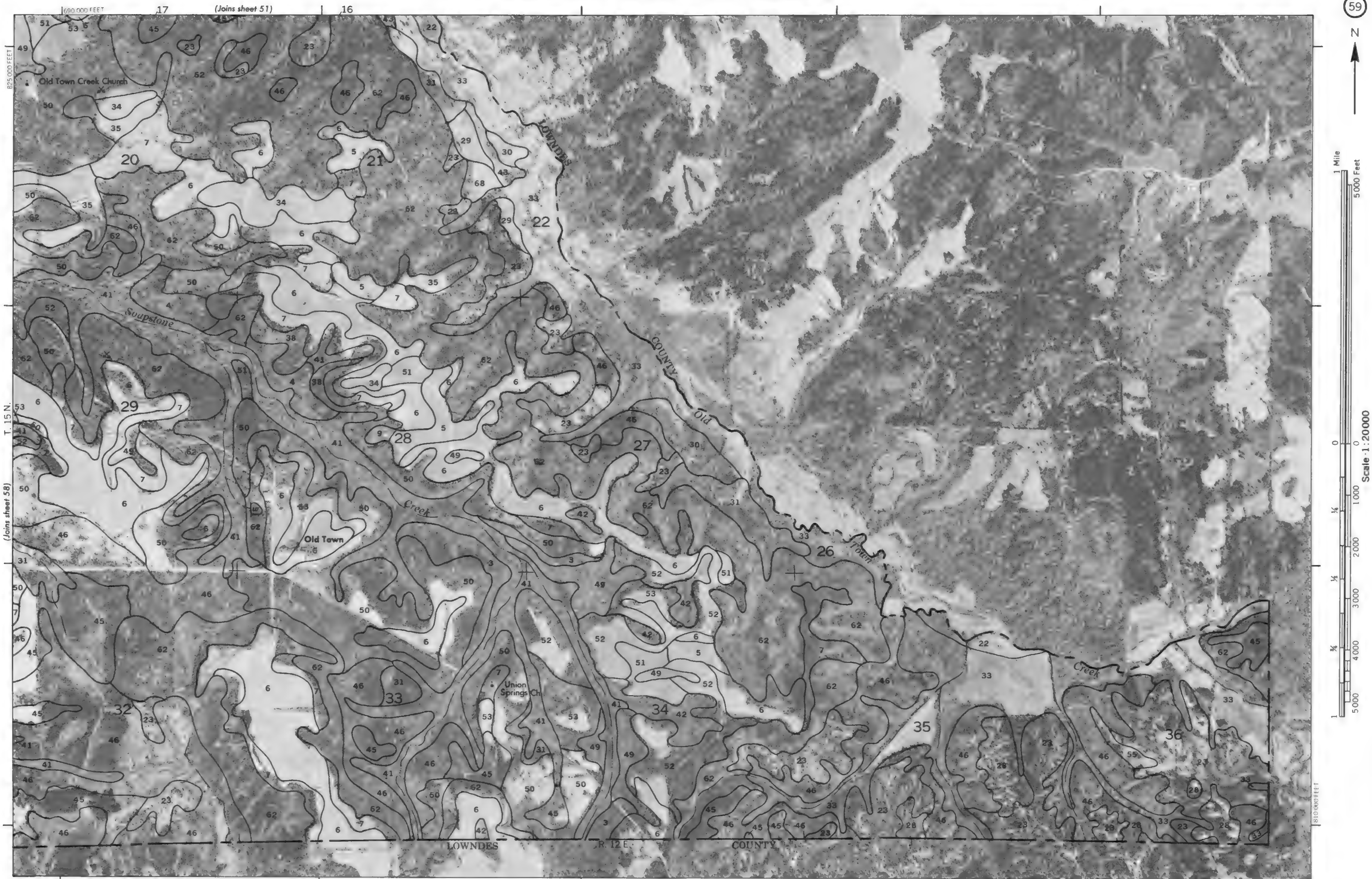

N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 46)
(Joins sheet 53)
(Joins sheet 55)
(Joins sheet 61)
R. 8 E. | R. 9 E.
T. 15 N.
590 000 FEET
570 000 FEET
810 000 FEET
Chilto Creek
Five Points
Providence Cemetery
Providence School
Antioch Church

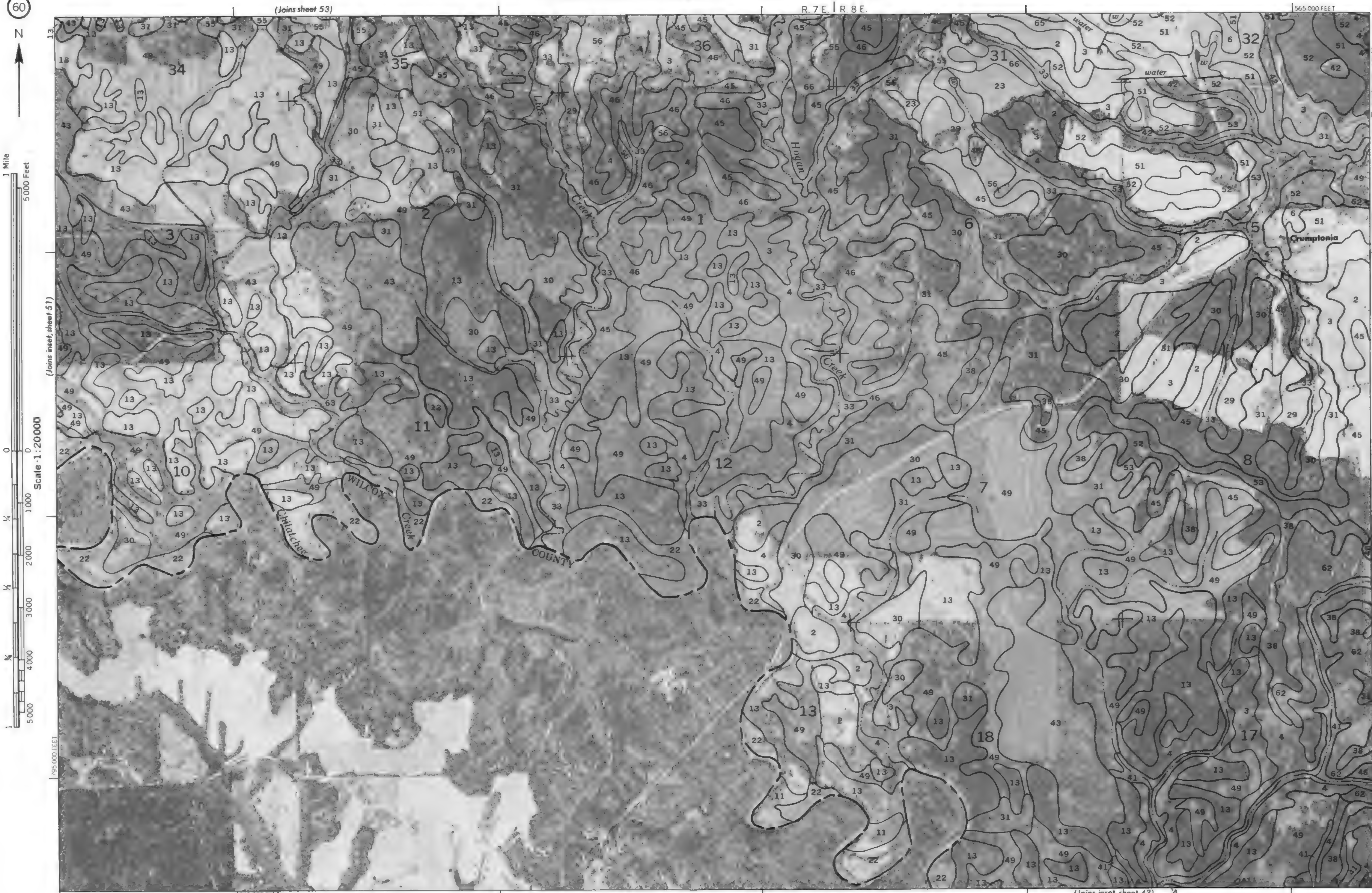

55
R. 9 E.
595 000 FEET
615 000 FEET
T. 15 N.
(Joins sheet 47)
(Joins sheet 54)
(Joins sheet 56)
(Joins sheet 62)
N
Big Swamp Branch
Big Swamp Creek
Silome School
Shiloh Church
CALHOUN BEND
ALABAMA RIVER
1 Mile
5000 Feet
Scale 1:20000


56
N
(Joins sheet 48)
R. 9 E. | R. 10 E.
640 000 FEET
825 000 FEET
Threemile Ditch
ALABAMA RIVER
Kings Landing
Irishman Ditch
water
Little Zion Church
Hope School
New Bride Ch
Mt Leveton School
Mt Leveton Ch
Titi Swamp
Cedar Creek
Mush Creek
Creek
(Joins sheet 55)
(Joins sheet 57)
(Joins sheet 63)
620 000 FEET
810 000 FEET
T. 15 N.
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000


57
N
R. 10 E.
R. 11 E.
640 000 FEET
825 000 FEET
(Joins sheet 49)
(Joins sheet 56)
(Joins sheet 58)
(Joins sheet 64)
660 000 FEET
810 000 FEET
T. 15 N.
T. 14 N.
New Bride Church
Shady Grove Church
Berlin
Berlin Branch
Mush Creek
Mt. Sinai Church
Louisville
Nashville
water
Scale 1:20000
1 Mile
5000 Feet

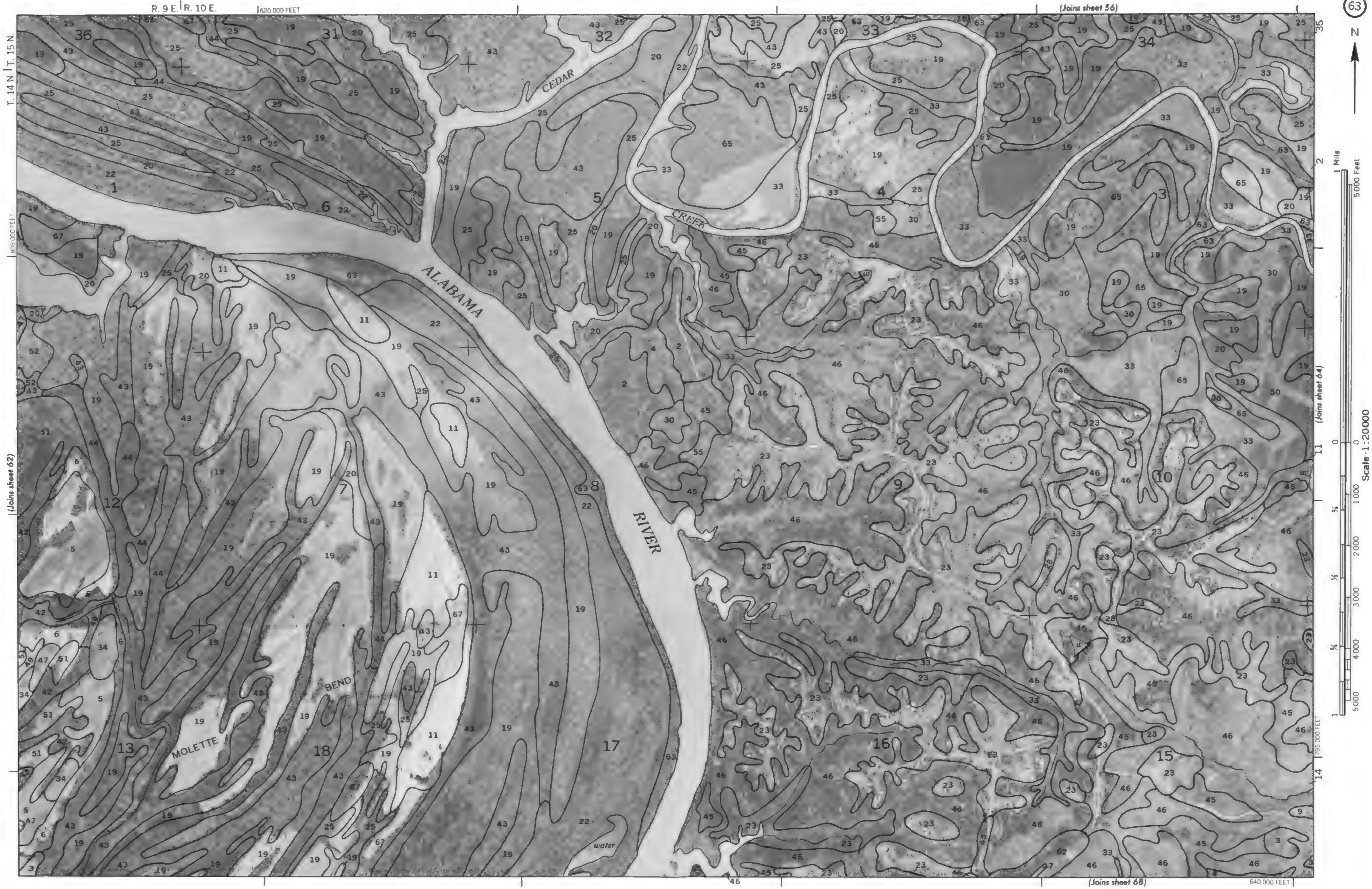

58
N
(Joins sheet 50)
R. 11 E. | R. 12 E.
685 000 FEET
Soapstone
Creek
Old Town Creek Church
Mt Olive Sch
water
water
Creek
(Joins sheet 57)
(Joins sheet 59)
(Joins sheet 65)
1 Mile
5000 Feet
Scale 1:20000
T. 15 N.
T. 14 N.
LOWNDES
COUNTY


59
(Joins sheet 51)
(Joins sheet 58)
690 000 FEET
710 000 FEET
825 000 FEET
810 000 FEET
T. 15 N.
R. 12 E.
Old Town Creek Church
Soapstone
Creek
Old Town
Union Springs Ch
LOWNDES
COUNTY
Old
Town
Creek
N
Scale 1:20000
1 Mile
5000 Feet

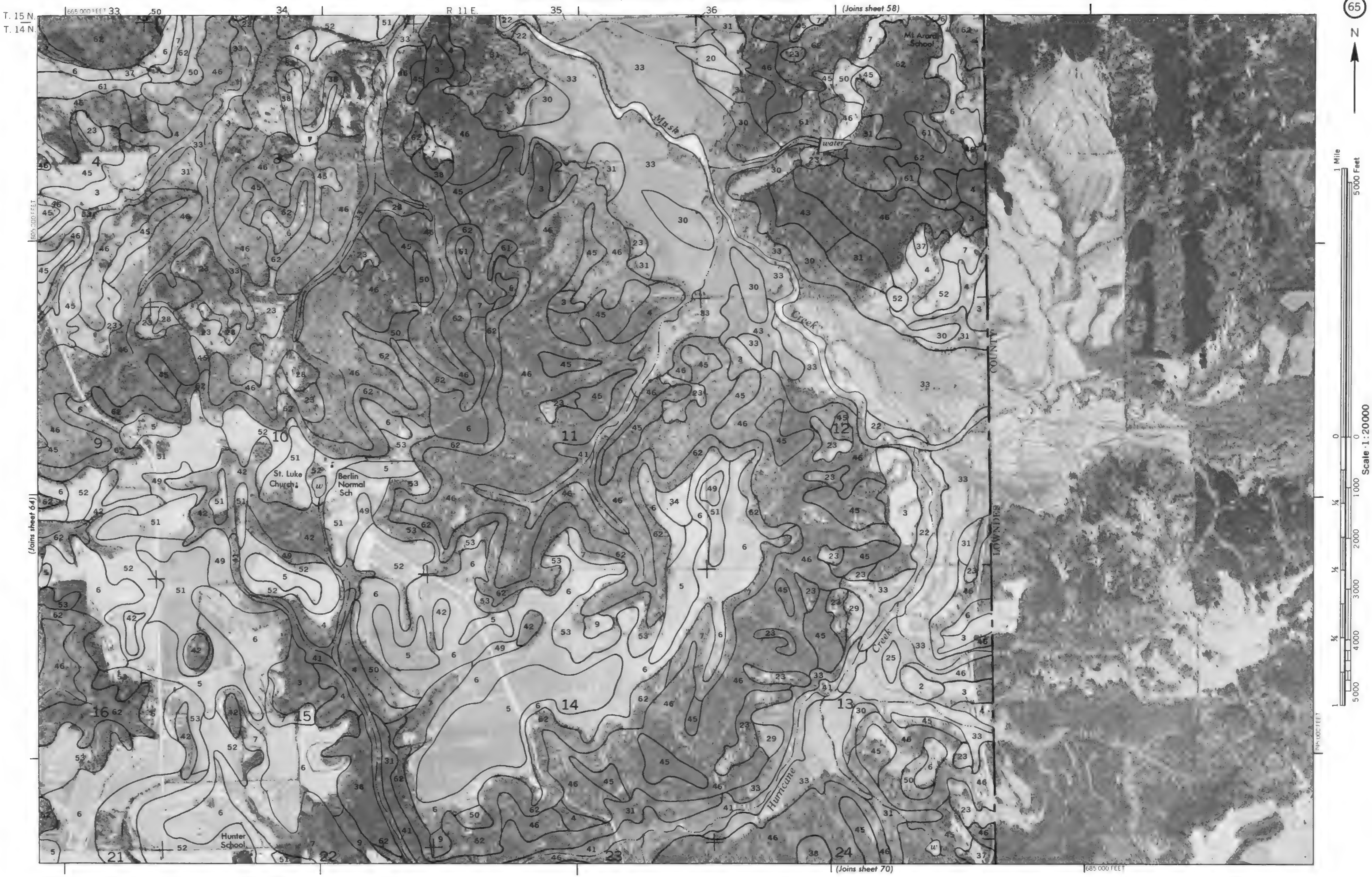

(Joins sheet 53)
R. 7 E.
R. 8 E.
565 000 FEET
T. 14 N.
T. 15 N.
805 000 FEET
(Joins sheet 61)
(Joins inset, sheet 51)
(Joins inset, sheet 43)
545 000 FEET
795 000 FEET
Crumptonia
water
Creek
Chilatchee
WILCOX
COUNTY
N
1 Mile
5000 Feet
Scale 1:20000


61
N
R. 8 E. | R. 9 E.
(Joins sheet 54)
(Joins sheet 60)
(Joins sheet 62)
(Joins sheet 66)
T. 14 N. | T. 15 N.
570 000 FEET
590 000 FEET
805 000 FEET
Athens Church
Crumptonia
Rocky Branch School
New Bethel Church
Rocky Branch
BOGUE
CHITTO
CREEK
water
1 Mile
5000 Feet
Scale 1:20000


(Joins sheet 55)
R. 9 E.
615 000 FEET
T. 14 N. | T. 15 N.
ALABAMA
RIVER
Big
Swamp
Creek
water
Tasso
Cheerful
Church
No 2
Molette
Bend
Sch
MOLETTE
BEND
(Joins sheet 61)
(Joins sheet 63)
(Joins sheet 67)
595 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000


63
R. 9 E. | R. 10 E.
620 000 FEET
(Joins sheet 56)
T. 14 N. | T. 15 N.
(Joins sheet 62)
(Joins sheet 64)
(Joins sheet 68)
805 000 FEET
795 000 FEET
640 000 FEET
CEDAR
CREEK
ALABAMA
RIVER
MOLETTE
BEND
water
N
1 Mile
5000 Feet
Scale 1:20000

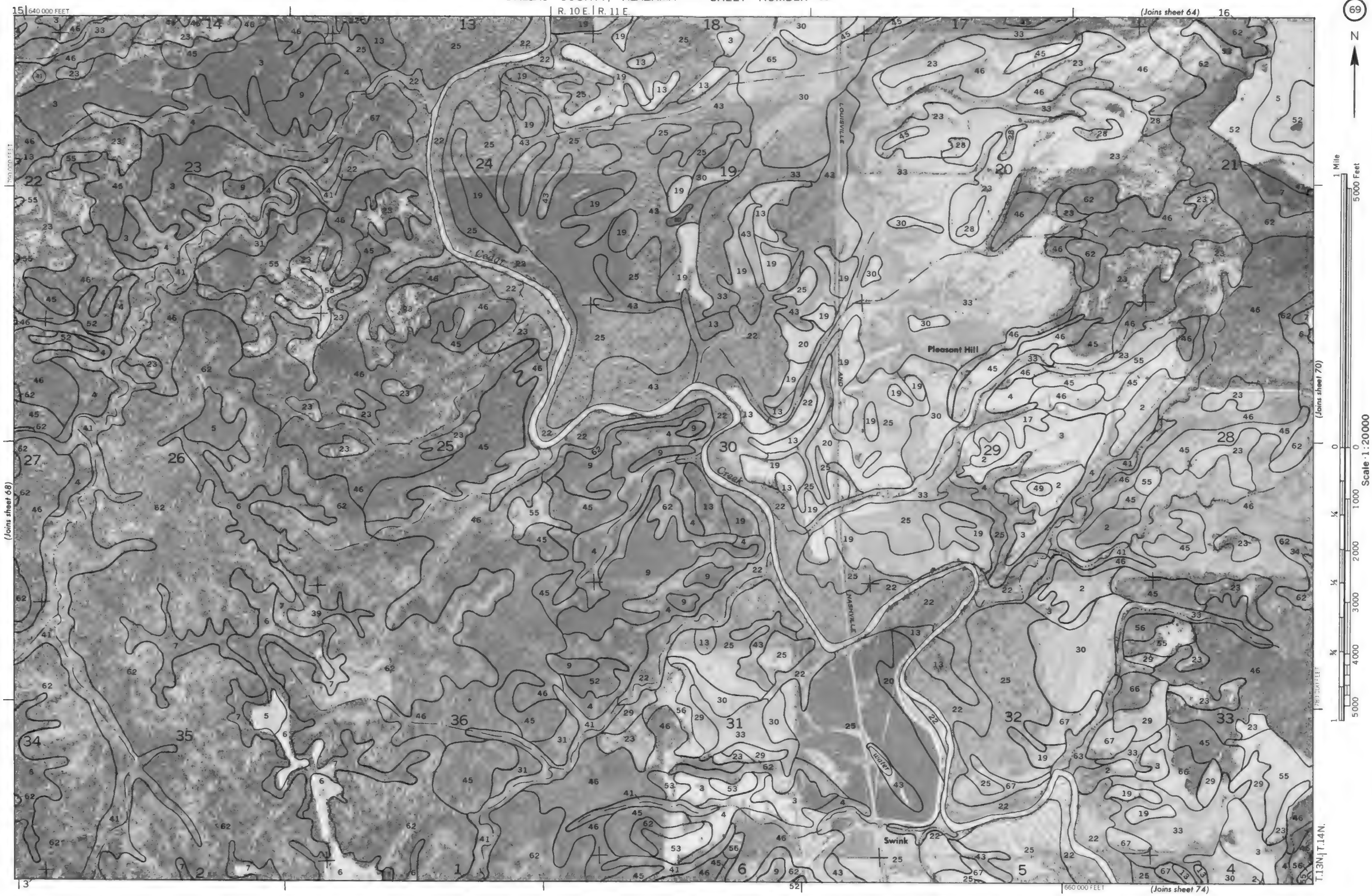
DALLAS COUNTY, ALABAMA — SHEET NUMBER 64


65
N
T. 15 N.
T. 14 N.
R. 11 E.
(Joins sheet 58)
(Joins sheet 64)
(Joins sheet 70)
Mt Ararat School
St. Luke Church
Berlin Normal Sch
Hunter School
Mush Creek
Hurricane Creek
water
LOWNDES COUNTY
665 000 FEET
685 000 FEET
1 Mile
5000 Feet
Scale 1:20000


66
N
(Joins sheet 61)
(Joins inset, sheet 43)
(Joins sheet 67)
(Joins sheet 71)
R. 8 E. | R. 9 E.
T. 14 N.
T. 13 N.
590 000 FEET
570 000 FEET
1 Mile
5 000 Feet
Scale 1:20 000
ALABAMA RIVER
MILLERS FERRY RESERVOIR
BOGUE CHITTO CREEK
WILLIAM "BILL" DANNELLY RESERVOIR
CHILATCHEE CREEK
WILCOX COUNTY
RUM CREEK
Ellis


67
N
595 000 FEET
R. 9 E.
(Joins sheet 62)
790 000 FEET
Little Zion Church
Pinebelt
ALABAMA
RIVER
Portland
Mt. Plesant Church
Oak Creek
(Joins sheet 66)
(Joins sheet 68)
(Joins sheet 72)
T. 14 N.
T. 13 N.
615 000 FEET
1 Mile
5000 Feet
Scale 1:20000


68
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 63)
R. 9 E. | R. 10 E.
(Joins sheet 67)
(Joins sheet 69)
(Joins sheet 73)
ALABAMA
RIVER
Salem Church
Shepardville
T. 14 N.
640 000 FEET
780 000 FEET
620 000 FEET

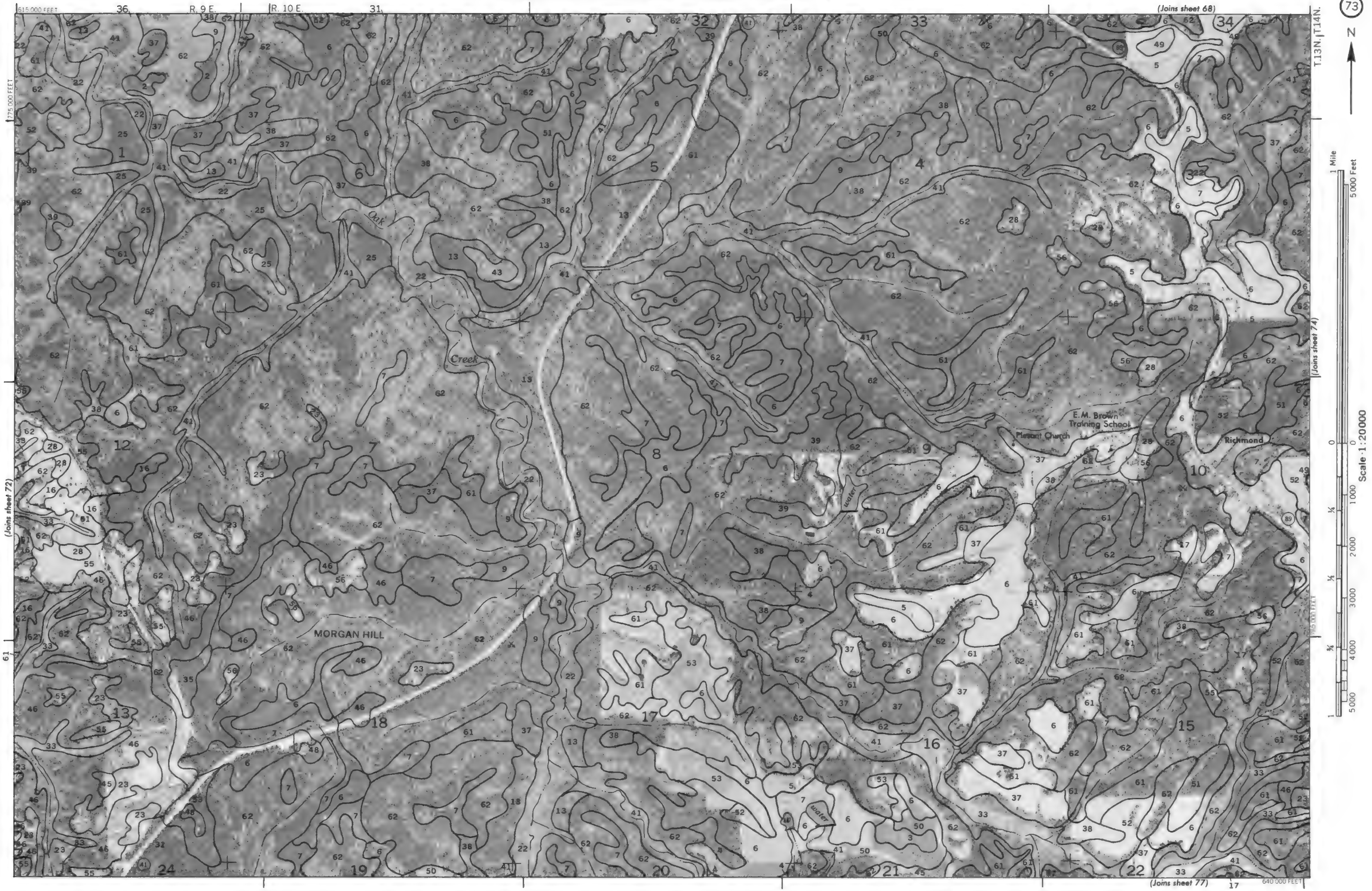

69
N
R. 10 E. | R. 11 E.
640 000 FEET
660 000 FEET
(Joins sheet 64)
(Joins sheet 70)
(Joins sheet 68)
(Joins sheet 74)
Pleasant Hill
Swink
Cedar
Creek
Louisville
and
Nashville
water
T. 13 N. | T. 14 N.
1 Mile
5000 Feet
Scale 1:20000

DALLAS COUNTY, ALABAMA — SHEET NUMBER 70


71
N
R. 8 E. | R. 9 E. (Joins sheet 66)
T. 13 N. | T. 14 N.
(Joins sheet 72)
570 000 FEET
590 000 FEET
765 000 FEET
ALABAMA RIVER
WILCOX COUNTY
Pine Barren Creek
Ellis
County Line Church No. 2
1 Mile
5000 Feet
Scale 1:20000


72
(Joins sheet 67)
R. 9 E.
T. 13 N. | T. 14 N.
N
1 Mile
5000 Feet
Scale 1:20000
(Joins sheet 71)
(Joins sheet 73)
(Joins sheet 76)
615 000 FEET
595 000 FEET
265 000 FEET
water
Mt. Pleasant Ch.
St. Paul Church
Tilden Sch.
Pine Barren Creek
WILCOX COUNTY

DALLAS COUNTY, ALABAMA — SHEET NUMBER 73




74
N
(Joins sheet 69)
R. 10 E.
R. 11 E.
665 000 FEET
775 000 FEET
(Joins sheet 73)
(Joins sheet 75)
T. 13 N.
Scale 1:20000
1 Mile
5000 Feet
765 000 FEET
640 000 FEET
(Joins sheet 78)
Cedar Creek
Swift Creek
LOUISVILLE AND NASHVILLE

DALLAS COUNTY, ALABAMA — SHEET NUMBER 75


(Joins sheet 72)
R. 9 E.
615 000 FEET
760 000 FEET
T. 13 N.
(Joins sheet 77)
745 000 FEET
595 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
County Line Ch
Tilden
Mt Calvary Sch
Pine Barren Creek
WILCOX COUNTY
water


77
N
(Joins sheet 73)
(Joins sheet 76)
(Joins sheet 78)
R. 9 E. R. 10 E.
620 000 FEET
760 000 FEET
745 000 FEET
640 000 FEET
T. 13 N.
WILDCAT HILL
St. Peter Church
Ebe County Line Ch
WILCOX COUNTY
water
1 Mile
5000 Feet
Scale 1:20000


(Joins sheet 74)
R. 10 E.|R. 11 E.
660 000 FEET
760 000 FEET
N
1 Mile
5000 Feet
Scale 1:20000
0
1000
2000
3000
4000
5000
(Joins sheet 77)
(Joins sheet 79)
T. 13 N.
745 000 FEET
640 000 FEET
Carlowville
Minters
Swift Creek
Snake Creek
Cedar Creek
Creek
Louisville
Nashville
water
WILCOX COUNTY


79
N
(Joins sheet 75)
(Joins sheet 78)
665 000 FEET
760 000 FEET
745 000 FEET
685 000 FEET
R. 11 E.
T. 13 N.
Friendship Baptist Ch
Crossroad Sch
Cedar Creek
LOWNDES COUNTY
WILCOX COUNTY
1 Mile
5000 Feet
Scale 1:20000